INDEPENDENT LOGISTICS ASSESSMENT HANDBOOK

Department of the Navy
Guide For Conducting
Independent
Logistics Assessments

NAVSO P-3692
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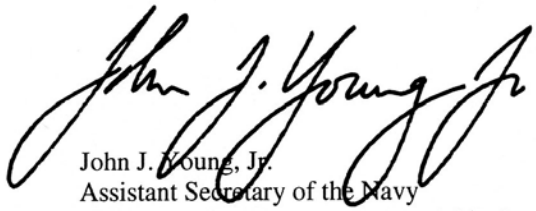
Foreword

Department of Defense policy requires the program manager, as the Total Life Cycle Systems Manager, to conduct logistics management activities throughout the system life cycle to ensure support system performance, affordability, cost and schedule are continuously assessed and used as key factors in making program tradeoffs and decisions. It is incumbent on the milestone decision authority to validate that the system will meet established performance requirements as well as total ownership cost targets at major program reviews and milestone decisions.

A primary step in achieving this is the periodic assessment of a program's integrated logistics support planning, the implementation of that planning and the ability of the logistics program to meet established performance requirements. These assessments must be performed at each major milestone. In addition, formal reviews with the warfighter are required at initial operational capability and full operational capability. In other words, the actual performance must be continually compared against performance expectations.

SECNAV Instruction 5000.2 Series and 4105.1 provide the Department of Navy policy regarding the requirement to conduct Independent Logistics Assessments (ILA). To assist program managers and milestone decision authorities in meeting this requirement, the Deputy Assistant Secretary of the Navy, Logistics along with the Deputy Chief of Naval Operations for Logistics (N4) jointly assembled this handbook on the conduct of ILAs. Its purpose is twofold. First, it provides a uniform and systematic approach for program offices to prepare for assessments as well as outline specific evaluation criteria for use by the assessment team. Second, and maybe most important, it provides the program manager with a framework and roadmap for structuring and executing successful logistics support programs throughout the system life cycle.

Use of this handbook and the vigorous, disciplined application of the independent logistics assessment methodology will enhance the supportability, sustainability and cost effectiveness of Department of Navy systems well into the future. It should further ensure that new systems are fielded with support systems fully in place, which enable the warfighter to execute their mission in support of the United States National Security Strategy.



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PART I
Logistics Assessment Methodology

Objective

The objective of Part I is to provide standard assessment criteria for use during an Independent Logistics Assessment (ILA). It provides logistics evaluation criteria that can be applied to all Department of Navy (DoN) programs. These criteria are not platform or system specific; rather, they are critical evaluation factors that should be tailored to the specific program being assessed.

Warfighter Requirements

The advent of Performance Based Logistics (PBL) as the Department of Defense (DoD) preferred support alternative calls for new focus on logistics performance requirements. The following table entitled Performance Requirements provides valuable background information to provide the assessment team with an understanding of overarching warfighter needs that drive the design of the support system. These needs serve as a basis for logistics trade-offs, decisions and implementation of a logistics program.

Performance Requirements
• What are the warfighter needs from the support system to meet sustained operational requirements? • Do warfighter needs address reduced footprint and total ownership costs as well as improved deployability and sustainability? • Are warfighter needs reflected in the performance agreements, Initial Capabilities Document (ICD) and specification documents? • Are performance measures/metrics (objectives and thresholds) specified to meet fleet/user oriented performance requirements (e.g., reliability, operational availability, mission capable rate, customer wait time, cycle time, footprint, cost/operating cycle, life cycle cost), and the target price for the set level of performance? • Are operating and support objectives defined where feasible considering performance histories of prior systems or systems of similar capabilities? • Are key designs for support-related cost and performance parameters (e.g., availability, reliability, maintainability, manpower) included in the ICD and as design requirements for subsequent acquisition phases? • Do requirements improve on logistics footprint reductions, limitations and deployment requirements compared to prior or similar systems? • How do the requirements address the need to reduce multiple configurations? • Do the performance agreements reflect warfighter requirements and are they measurable objectives?

ILS Factors Requiring Review

The following logistics factors require review during an ILA regardless of the support strategy:

- Integrated Logistics Support (ILS) Management
- ILS Budgeting and Funding

- Design Interface
- Maintenance Planning
- Support Equipment
- Supply Support
- Manpower, Personnel and Training
- Packaging, Handling, Storage and Transportation
- Configuration Management
- Product and Technical Data
- Environmental, Safety and Occupational Health
- Facilities
- Computer Resources and Software Support

Assessing the ILS Factors

To assess a specific logistics factor, the following general steps should be followed. Figure 1 provides a flowchart of the general assessment process:

1. Review the basic program requirements, including: Performance Agreements, Key Performance Parameters (KPPs) and critical system parameters in the ICD (formerly Mission Needs Statement), Capability Development Document (CDD) and Capability Production Document (CPD) (formerly Operational Requirements Document) and Acquisition Plan (AP), depending on program phase.
2. Review the logistics support strategy and Integrated Logistics Support Plan (ILSP) (also referred to as Acquisition Logistics Support Plan)/User Logistics Support Summary (ULSS) to ensure the basic requirements have been translated into logistics requirements. The ILSP/ULSS should also provide a mapping to the primary support product/technical documentation.
3. Review the primary support documentation for each Integrated Logistics Support (ILS) factor (e.g., management) to ensure logistics requirements are further detailed and required analyses have been performed. This should include a review of the Logistics Requirements and Funding Summary (LRFS) (or similar document) and associated funding documents to ensure support funding requirements for each ILS element are appropriately identified, funding is available and shortfalls identified. Ensure each ILS element is funded in the year funding is contractually required to produce the end item in the correct timeframe per the master ILS schedule
4. Review the contract/tasking to ensure appropriate requirements have been flowed to the contractor and other activities.
5. Review ILS factors against the master program schedule. Review reasonableness of the tasks and likelihood of completion of each ILS task within the allocated schedule and man-loading.
6. Determine if the performance agreements, specified supportability KPPs and critical system parameters in the ICD/CDD/CPD can be met from a supportability standpoint. Depending on program phase, the information required to perform this assessment can generally be found in Reliability, Availability and Maintainability (RAM) models and predictions, development and operational test information documents, RAM/Built In Test (BIT) requirements in the contract/statement of work, RAM analyses and test results, and in Chief of Naval Operations (CNO) sponsored tests, etc. If the RAM KPPs and critical system parameters of the ICD/CDD/CPD are not met, then the ILS areas must be reassessed to determine what impact the lower RAM numbers will have on the supportability of the system. For instance, if the actual reliability number does not meet the reliability stated in the CDD and spares are being reviewed, then the originally calculated requirements for spares may not be correct and may need to be recalculated. If manpower is being reviewed, the manpower analysis may be suspect since it does not take into account more frequent failures and longer times to repair and maintain systems. If there is an impact, assess risk to the program and document a finding. Appendix A contains a cross reference of typical reliability measures and their relationship to the ILS factors and should be used as a guide to determine if there is any impact to a particular ILS factor.
7. Document risks/issues in the ILA report using the metrics of this document and the Part II certification criteria.

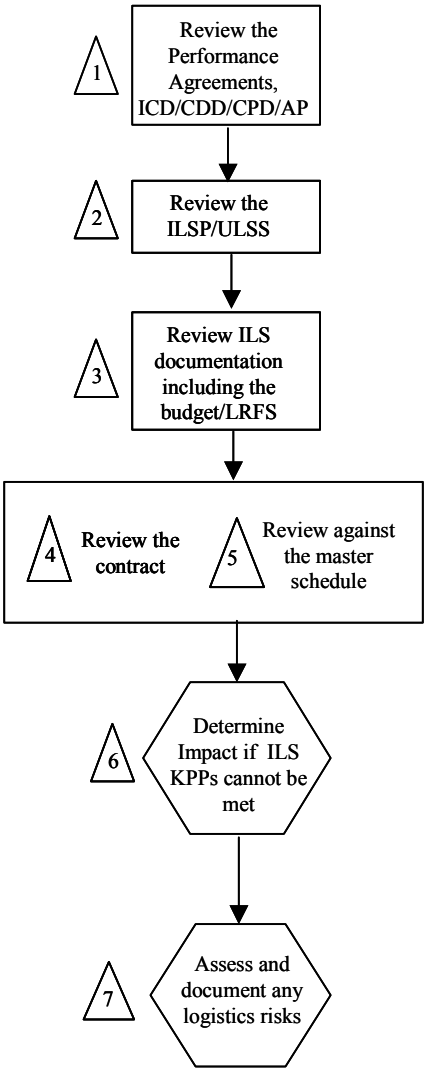

Figure 1. General Assessment Process

Logistics Factors Criteria

The following provides information to be used for assessing a logistics program. The Evaluation Criteria contained in the tables below should be used as a guide to assess the planning and status of the ILS program for the system under review, regardless of the support strategy (e.g., PBL, traditional support). These criteria are derived from both policy and best practices, which have proven to produce optimal supportability. They are not platform specific, platform or Systems Command unique requirements should be used to supplement or tailor these criteria.

Associated with each measure is milestone information for a typical development program. The criteria are worded to indicate when the initial effort should be assessed as indicated by an "X." Updates and implementation will be assessed at the subsequent milestone and decision point, and is indicted by a "U." It should be noted that although some of these criteria are initiated prior to Milestone A, the assessment criteria contained herein starts at Milestone B.

Varying program requirements and acquisition strategies may require tailoring of the milestone information in the tables as they will not always fit all programs at all times.

ILS Management

Evaluation Criteria	Milestone B	C	FRP
1. Management Planning			
• The ILSP, as applicable, is developed and implemented.	X	U	U
• Market analysis is conducted to scope available systems and product support capabilities (public and private) and to define opportunities for achieving support objectives through design and product support strategies.	X	↓	↓
• Logistics metrics are identified in the acquisition program baseline.	X		
• Support-related performance and acceptance criteria to be demonstrated during planned testing and through modeling and simulation are developed.	X		
• Logistics parameters and tests are included in the Test and Evaluation Master Plan (TEMP).	X		
• Initial Operational Capability (IOC) date is established and defined.	X		
• The PBL strategy/implementation is structured to continuously reduce the demand for logistics support. For example, continuous improvement of weapon system supportability and reduction in operating and support costs is planned by dedicated investments, continuous reduction in the demand for logistics, continuous improvements in the efficiency of the logistics support system and minimization of the resources required (including time). NOTE: Contractor Logistics Support (CLS) is one of many product support strategies that can be selected for implementation under PBL.	X		
• Planning is established/implemented for the transition of the program's legacy systems and their existing support structures to the PBL approach, including the use of a product support integrator to facilitate the transition.	X		
• PBL Business Case Analysis (BCA): – Is used to support individual PBL decisions. – Includes the estimated costs and describes the benefits between alternative product support strategies (e.g., buying a predetermined level of availability to meet warfighter's objectives). – Is validated by the Naval Center for Cost Analysis. – Reviews are scheduled in time to support programmatic reviews.	X		
• The PBL product support integrator is identified and agreements are finalized and: – Are usually long term and include the appropriate items discussed above on the PBL planning. – Identify all stakeholder roles and responsibilities. – Identify sources and data to collect and use. – Identify review/reporting requirements and dispute resolution. – BCAs are used to support individual PBL decisions made between alternatives.	X		
• Trade studies are conducted on a continuous basis to ensure that performance and supportability goals are met.	X		
• Trade studies consider alternate operating and support concepts, with specific consideration of performance requirements.	X		
• Logistics support is included as a part of the life cycle system engineering approach to supportability, including information interoperability requirements.	X		
• Public-private partnering is optimized.	X		
• Contract clauses are sufficient to meet surge requirements and to ensure re-establishment of organic or commercial support capability as necessary.	X		
• A risk management program has been established that includes both Government and contractor participation and sharing of risks.	X		

ILS Management

Evaluation Criteria	Milestone B	C	FRP
• Logistics support program risks and mitigation plans have been identified and assessed.	X		
• Post IOC plans have been developed for continued evolution of sustainment strategies. Continued technology refreshment is planned to increase reliability and/or reduce operating and support cost.		X	U
• Logistics and overall sustainment requirements are referenced in the CDD and CPD.		X	U
2. Warranty			
• Mutually beneficial incentives are established to facilitate long-term business relationships. The provider is given incentive to meet specified performance measures.	X	U	U
• Cost-benefit analysis is conducted to determine the appropriateness of implementing a warranty plan.	X	↓	↓
• Warranties are considered and integrated in developing the program's logistics support strategy, whether PBL or traditional.	X		
• The warranty administration and enforcement includes defect reporting, analysis and corrective action processes that are timely and effective.	X	↓	
• Post award cost-effectiveness assessment of the warranty plan is periodically performed.		X	↓

ILS Budgeting and Funding

Evaluation Criteria	Milestone B	C	FRP
1. Logistics Requirements and Funding			
• A LRFS or similar type document has been established.	X	U	U
• Logistics funding requirements are developed using cost as an independent variable, accepted cost estimating methods and risk management principles.	X	↓	↓
• Life cycle cost estimates, including cost reduction efforts have been developed and validated to optimize total ownership of costs and schedules.	X		
• The LRFS supports the budgetary requirements of the logistics support plan.	X		
• The correct appropriations are identified for each logistics requirement. Appropriate decisions have been made regarding the type of funds used for procurement of PBL resources (e.g., use of Navy Working Capital Fund for long term spares support for systems that have been procured and deployed rather than use of multiple year increments of appropriated funding.)			
• Funding shortfalls and impacts are identified, prioritized, fully documented and addressed to the program manager and resource sponsor.	X		
• Funding requirements are appropriately time-phased.	X		
• Funding requirements are identified in the acquisition program baseline.	X	↓	↓

Design Interface

Evaluation Criteria	Milestone B	C	FRP
1. Reliability, Availability and Maintainability			
• ILS factors are traceable to the following factors of the Design Reference Mission Profile (DRMP):	X	U	

Design Interface

Evaluation Criteria	Milestone B	C	FRP
– The environmental profile includes the system's production, operation and support environments with their associated time-lines. The operating and non-operating requirements may include temperature, vibration, electromagnetic interference, electrostatic discharge, humidity, altitude, salt spray, fog, nuclear, chemical and biological, sand/dust, foreign object damage, production contaminants, etc.			
– Functional profiles are prepared and detailed to the subsystem, assembly and part levels as the system design progresses. They describe the system functional requirements and their associated mission and life-cycle time-lines.			
– Logistics-use-profiles and associated timelines are prepared and updated over the life cycle based on the system detail design and maintenance plan.			
• RAM measures (e.g., Operational Availability (Ao), Mean Time Between Failure (MTBF), Mean Time To Repair (MTTR) and Mean Logistics Delay Time (MLDT)) are defined in quantifiable and measurable terms.	X	U	U
• RAM/testability requirements are defined consistent with the ICD and flowed down to program documents and subcontractors as appropriate.	X	↓	↓
• The appropriate RAM/Testability/ILS design analyses/tests are properly phased into the program.	X		
• RAM/Supportability design guidelines have been established.	X		
• Reliability Centered Maintenance (RCM) analysis and the Failure Modes, Effects and Criticality Analysis (FMECA) are used to identify failure modes, their frequency, their effects on performance and their criticality, and are further used to develop condition based and schedule based maintenance tasks.	X		
• Predictions, analyses and test results support RAM requirements.		X	
• A readiness model (e.g., TIGER and Availability Centered Inventory Models) is used to assess the effects of various levels of redundancies, spares, downtimes and maintenance concepts on operational availability.		X	↓
2. Failure Reporting, Analysis and Corrective Action System (FRACAS)			
• A FRACAS is established and failures are analyzed and trended for ILS visibility.		X	U
• A FRACAS is performed on engineering development models, pre-production units and production units.		X	U
3. System Reviews			
• Design review requirements, including supportability, are flowed to subcontractors.	X	U	
• The preliminary design review, including supportability, has been conducted.		X	
– Approximately 20% of the design should be complete.			
• The critical design review, including supportability, has been conducted.		X	
– Approximately 95% of the design should be complete.			
• The production readiness review has been performed to include an assessment of system supportability requirements.		X	
4. Manufacturing Planning			
• A manufacturing plan has been developed and includes:	X	U	U
– A defect/variation prevention program.			
– Manufacturing processes that have defined yield levels and have been validated.			
– Environmental stress screening to precipitate latent, intermittent or incipient defects or flaws introduced during the manufacturing process.			

Design Interface

Evaluation Criteria	Milestone B	Milestone C	Milestone FRP
5. Parts and Materials Selection			
• Guidance and/or requirements should be documented in a parts and materials design guide before the start of design, addressing parts selection, derating and testability factors. Adherence to the guidelines should be verified at design reviews.	X	U	U
• The order of precedence for parts selection emphasizes the use of qualified manufacturers lists parts, particularly for applications requiring extended temperature ranges.	X	↓	↓
• A preferred parts list is required prior to detailed design.	X		
• Shelf and operating life requirements have been identified.	X		
• Identification of Commercial-Off-The Shelf (COTS)/Non-Development Item (NDI) reliability is required.	X	▼	
• Parts and materials selected are qualified to the worst case DRMP and detail design environments. Uprating or upscreening of parts is not a best practice and should not be performed.		X	
• Parts derating is required for all electronic/electrical components. Electrical parameters of parts are characterized to requirements derived from the DRMP to ensure that all selected parts are reliable for the proposed application.		X	
• Highly integrated parts (e.g., application specific integrated circuits) are used to reduce: – The number of individual discrete parts/chips. – The number of interconnections. – Size, power consumption and cooling requirements. – Failure rates.		X	
• The critical items list has been developed and includes: – Any item of high technical risk with no workaround. – Items with schedule/delivery risk. – Sole source items. – High failure rate items. – Safety of flight items.		X	
• A Diminishing Manufacturing Sources and Material Shortages (DMSMS) program and technology insertion program has been established.		X	
• A COTS refresh program has been established.		X	
• COTS/NDI parts and their applications meet DRMP.		X	▼

Maintenance Planning

Evaluation Criteria	Milestone B	C	FRP
1. Maintenance Concept, Design & Analyses			
• The accessibility, diagnostics, repair and sparing concepts for all maintenance levels is established.	X	U	U
• Requirements for manpower factors that impact system design utilization rates, pilot-to-seat ratios and maintenance ratios are identified.	X	↓	↓
• Life cycle supportability design, installation, maintenance and operating constraints and guidelines are identified.	X		
• Maintenance planning and analyses are consistent with requirements for USC Title 10 CORE Government logistics maintenance capability and public/private partnering.	X		
• The design contains requirements for sensors to be embedded at the appropriate hardware levels.	X	↓	
• Economic and non-economic Level Of Repair Analysis (LORA) is performed.		X	
• The weapon system is characterized/tested at the proper level to identify failure/ degradation conditions under various life cycle operating and environmental conditions.		X	↓
2. Maintenance Plan			
• If the RCM approach is implemented, an on-condition status information/system is defined (e.g., CBM+) and integrated.	X	U	U
• Defines specific criteria for repair and maintenance for all applicable maintenance levels in terms of time, accuracy, repair levels, built-in-test, testability, reliability, maintainability, nuclear hardening, support equipment requirements (including automatic test equipment), manpower skills and facility requirements for peacetime and wartime environments.	X	U	↓
• States any inter-service maintenance requirements, organic and contractor mix, projected workloads, installation requirements and time phasing for accomplishing depot maintenance requirements.		X	
• Defines the maintenance approach including level of repair and includes the results of the analysis to determine logical maintenance task intervals, grouping and packaging.		X	
• Defines the actions and support necessary to ensure that the system attains the specified Ao that is optimized considering RCM, CBM, time-based maintenance and total ownership cost.		X	
• States specific maintenance tasks, including battlefield damage repair procedures, to be performed on the materiel system.		X	
• States the extent, duration and use of interim contractor support (when applicable) and provides plans for transition to organic support.		X	
• Defines actions and support required for materiel fielding.		X	
• Specifies the type of repair (e.g., inspect/repair as necessary, disposal or overhaul).		X	
• Maintenance task times have been derived from the following: – Reliability (e.g., MTBF). – Maintainability (e.g., MTTR, maintenance task times). – Availability (e.g., task time limits). – Reliability and maintainability tests. – Performance monitoring/fault detection/fault isolation and diagnostics.		X	
• Validation tests are conducted under representative operating conditions.		X	↓

Maintenance Planning

Evaluation Criteria	Milestone B	Milestone C	Milestone FRP
3. Testability and Diagnostics			
• The testability/BIT concept is defined with the operation concept and the maintenance concept for all levels of maintenance.	X	U	U
• Design analyses (e.g., fault tree, failure modes, effects and criticality) have been used to determine test point requirements and fault ambiguity group sizes.		X	↓
• The level of repair and testability analysis is completed for each configuration item for each maintenance level to identify the optimum mix of BIT, semi-automatic test equipment and general-purpose test equipment.		X	
• Preliminary BIT/testability analysis is completed by preliminary design review.		X	
• Detailed BIT/testability analysis is completed by critical design review.		X	
• The effectiveness of BIT is validated with tests.		X	
• Failure of the BIT circuitry does not precipitate other hardware/software failures.		X	
• BIT filtering is applied to minimize false alarms.		X	
• System anomalies and intermittents are analyzed for possible changes to the BIT design, thresholds/tolerances and/or filtering.		X	
• BIT software can be revised independently and without change to the operating software.		X	
• BIT indications and false alarms are analyzed for corrective action.		X	↓

Support Equipment

Evaluation Criteria	Milestone B	Milestone C	Milestone FRP
1. Support Equipment Considerations			
• The environmental and physical constraints, such as size, weight, power, temperatures and interfaces have been factored into Support Equipment (SE) design.		X	U
• Analyses to identify the optimum mix of automatic and manual fault detection and isolation equipment at each applicable maintenance level has been conducted.		X	↓
• Types and quantity of SE for each location has been established.		X	
• Manpower, training, maintenance levels and maintenance task requirements are identified.			
• The SE requirements document or equivalent is submitted by the contractor to justify SE requirements and initiate follow-on support activities.		X	
• Required technical documentation to support the SE is identified and includes:		X	
– Procedures to perform the required tests and diagnostics.			
– Test measurement and diagnostic equipment calibration requirements and associated technical parameters.			
– All product/technical data required to support and operate required support equipment throughout the life cycle of that product.			
– Test fixtures and/or interfaces to connect the system to the test equipment.			
• Provisioning documentation identifies:		X	↓
– Tools and test equipment by task function and maintenance level.			
– Category codes (e.g., source, maintenance and recoverability codes) are identified for SE.			
– Manufacturers part numbers, nomenclatures, descriptions, estimated prices and recommended SE quantities.			

Supply Support

Evaluation Criteria	Milestone B	Milestone C	Milestone FRP
1. Sparing Analyses			
• Supportability analyses with the associated BCA define the sparing approach (e.g., PBL, direct vendor delivery, inventory control point reprocurement and provisioning).	X	U	U
• Support cost drivers are identified.	X	↓	↓
• Key activities and milestones such as material support dates/Navy support date have been identified.	X	↓	↓
• A readiness-based spares model (e.g., TIGER and Availability Centered Inventory Model) is used to compute spares requirements, which include:		X	↓
– Failure rates.			↓
– Repair times.			↓
– Maintenance/repair limitations.			↓
– Downtimes.			↓
– Criticality of the spare to the mission.			↓
– Required Ao and mission times.			↓
• Responsibility and requirements for warehousing and transportation are established.		X	↓
2. Asset Management			
• Asset visibility is fully maintained on Navy Inventory Control Point files.		X	U
• The inventory of spares to be procured is determined.		X	↓
• Adequate funding for replenishment is identified.		X	↓
• Allowances are determined.		X	↓
• Provisions for surge requirements are identified.		X	↓
• The Provisioning Support Documentation Automated Retrieval and Tracking System is used in budgeting for initial and recurring spares, as applicable to the support strategy.		X	↓
• An integrated supply chain is implemented across Government and industry that focuses on improvements to system readiness and responsive warfighter support, as applicable.		X	↓
• A secure, integrated information system is implemented across industry and Government that enables comprehensive supply chain integration and full asset visibility, as applicable.		X	↓
• Provisioning conferences are conducted, as necessary, to determine if the contractor's provisioning preparation, documentation and facilities are adequate.		X	↓
• Provisioning screening has been conducted to:		X	↓
– Prevent duplicate entries in the DoD supply data system.			↓
– Obtain maximum use of existing supply items.			↓
• Item management codes are assigned, which include source, maintenance and recoverability codes.		X	↓
• Provisioning data reports, such as the following, have been generated:		X	↓
– Recommended repair parts list provided for pre-operational repair parts and training equipment			↓
– Provisioning parts list determining the range and quantity of support items for an initial period			↓
(See Support Equipment for associated provisioning requirements)			↓
3. Interim Contractor Support			
• The interim support item list identifies support requirements from a transitional operating period as well as the funding for that support.		X	U
• Transition planning is developed and implemented to ensure attainment of full operational support beyond the interim support period for all applicable logistics factors.		X	U
• Contractor teams are supporting fielded units if Government support is not available.			X

Supply Support

Evaluation Criteria	Milestone B	Milestone C	Milestone FRP
4. Organic Support			
• Organic support requirements and funding are defined to transition from interim to organic support.	X	U	U
• Inter-service visibility is established for optimal organic support selection.	X	↓	↓
• A Plan of Action and Milestones (POA&M) is developed to phase in organic support.	X	↓	↓
5. Post Production Support			
• Post production support strategy has been developed and implemented.		X	U
• Items that are single source or those for which the Government cannot obtain data rights and the associated corrective action plans are identified.		X	↓
• Product shelf and useful operating life are specified in the post production support plan.		X	
• Strategies to resolve potential problems (e.g., production or repair capabilities, software upgrades/maintenance, SE, technical data) are established.		X	
• A program manager/Naval Supply Systems Command reprocurement engineering support agreement is in place.		X	↓

Manpower, Personnel and Training

Evaluation Criteria	Milestone B	Milestone C	Milestone FRP
1. Requirements			
• Preliminary manpower estimates have been identified.		X	U
• Manpower and personnel requirements have been identified for both organic and contractor support including:		X	↓
– Special skills.			
– Maintenance and operator labor hours by rate by year.			
– Number of personnel by rate, maintenance level and year.			
– Operator and maintainer organizational level assignments defined.			
• Maintenance task times, maintenance skill levels and number of maintenance personnel required have been derived from the following:		X	
– Reliability (e.g., MTBF).			
– Maintainability (e.g., MTTR, and maintenance task analyses).			
– Availability (e.g., task time limits).			
– Reliability and maintainability tests.			
– Performance monitoring/fault detection/fault isolation and diagnostics.			
• Requirements for both organic and contractor manpower requirements are validated under representative operating conditions.		X	↓
2. Human Systems Integration Analysis			
• Human systems integration analysis addresses:		X	U
– Accessibility.			
– Visibility.			
– Human factors/ergonomics.			
– Testability/BIT.			
– Complexity.			

Manpower, Personnel and Training

Evaluation Criteria	Milestone B	Milestone C	Milestone FRP
– Standardization and interchangeability. – Use of mock-ups, modeling and simulation. – Operational experience. • Broad cognitive, physical and sensory requirements for the operators, maintainers and support personnel that contribute/constrain to total system performance have been analyzed.		X	U
3. Navy Training Systems Planning • A Training Planning Process Methodology is conducted. • Resource requirements are specified for training equipment, materials, facilities and personnel. • Instruction in formal schools, on-the-job-training and follow-on training includes: – System operation and maintenance levels (e.g., daily, weekly, monthly, quarterly, semi-annually and on condition). – Individual and team training. – Instructor training. • Training requirements reflect configuration updates to the weapon system.	X X X X	U ↓ ↓	U ↓ ↓
4. Training Outline and Curricula Design • Terminal training objectives are defined in detail. • Specific criteria are established to determine the success of training. • Operator and maintainer training are embedded in the Interactive Electronic Technical Manual (IETM). Job performance aids are included. • Safety procedures have been incorporated into training curricula.		X X X X	U ↓ ↓
5. Training Material • Technical manuals are developed prior to the development of training materials. • Instructor guides, course curriculum and student guides, as well as audio-visual training aids, are developed for classroom training. • Software is developed to disseminate computer-based training. • After development, the training material is evaluated for content, clarity and accuracy, typically in a controlled environment of a pilot course.		X X X X	U ↓ ↓
6. Training Devices/Simulators • Training devices to support operator or maintainer training are identified. • A military characteristics document is prepared for each training device, defining its basic physical and functional requirements. • Maximum embedded on-board training capability in deployed equipment is used. • Pre-faulted modules or software to simulate faults for diagnostics training are used. • Simulation of scenarios reflecting the actual operating environment are used for operator training.		X X X X X	U ↓ ↓
7. Initial Training Requirements • Initial training is provided in the operation, maintenance or employment of a system or training aid. • Contractor test and evaluation activities are used for validation of training requirements and initial fleet training for Operational Evaluation and fleet introduction.		X X	U U

Packaging, Handling, Storage and Transportation

Evaluation Criteria	Milestone B	Milestone C	Milestone FRP
1. Requirements			
• Storage, handling and transportation profiles of the configuration items over the system life cycle from acceptance through disposal have been derived from the DRMP.	X	U	U
• The DoD's computerized Container Design Retrieval System database has been searched to preclude the design of new specialized containers when suitable ones exist in the system.	X	↓	↓
• Military Packaging, MIL-STD-2073, has been considered for:	X	↓	
– Items that documented analyses have shown cannot be protected and preserved in a cost-effective manner using commercial packaging.			
– Items delivered during wartime for deployment with operational units.			
– Items requiring reusable containers.			
– Items intended for delivery-at-sea.			
– Items where the contractor has determined military packaging is the optimal packaging solution.			
• Packaging intended for international use has been approved by the Department of Transportation.		X	
• Storage monitoring requirements are incorporated into technical publications.		X	
• Transportability problems are addressed, to include:		X	
– Oversized/overweight items.			
– Items requiring special transportation modes.			
– Items that are classified.			
• Shelf-life requirements have been identified.		X	
• Time delivery requirements for all shipments to the Navy from contractors have been identified.		X	
• Transportation carriers are required to provide near real-time shipment tracking services and support customer access to their shipment tracking system.		X	↓
2. Testing			
• Design validation testing has been conducted on special packaging identified in MIL-PRF–49506.		X	U
• Hazardous material packages have been tested in accordance with the applicable requirements for performance packaging contained in the International Air Transport Association Dangerous Goods Regulations or the International Maritime Dangerous Goods Code and with the Code of Federal Regulations (CFR) Titles 29, 40 and 49.		X	↓
• Ammunition tests have been conducted to the requirements of MIL-STD-1660.		X	↓

Configuration Management

Evaluation Criteria	Milestone B	Milestone C	Milestone FRP
1. Configuration Baseline			
• Configuration Management (CM) decisions are based on factors that best support implementation of performance-based strategies throughout the product life cycle.	X	U	U
• Requirements for the configuration identification, control, status accounting, waivers/ deviations, engineering changes and verification/audit functions are established for hardware, software and product/technical data.	X	↓	↓
• At the appropriate milestones, the functional, allocated and product baselines have been established and approved from development through disposal.	X		
• Nomenclature has been established where appropriate.	X		
• Interfaces are defined using interface control documents as applicable.	X		
• The hardware/software requirements and product/technical data specification and interface requirements specification have been prepared and approved.	X		
• Physical and functional characteristics are accurately reflected in design documentation.	X	↓	
• Each computer software configuration item and its corresponding computer software components and computer software units have been identified.		X	
• A software design document has been written for each computer software configuration item.		X	
• The version, release, change status and other identification details of each deliverable item of software are known.		X	
• For COTS/NDI, form/fit and function information has been required/provided for refresh.		X	
• Subcontractor CM requirements including information, data and metrics are established.		X	↓
2. Configuration Control			
• Configuration control processes and procedures are established including change initiation, evaluation and disposition. An engineering release system is utilized to control change, manufacturing and acceptance processes.	X		U
• A configuration control board is established that includes logistics representation.	X	U	↓
• Audits have been conducted to verify the functional, allocated and/or baseline configuration.		X	
• Each configuration item is functionally audited to verify performance against design documentation.		X	
• A functional configuration audit is conducted at the end of the System Development and Demonstration phase on each configuration item and subsequently for changes.		X	
• A physical configuration audit is conducted to verify as-built hardware meets design documentation.		X	↓
3. Configuration Status Accounting			
• The configuration status accounting information is maintained in a CM database that may include such information as the as-designed, as-built, as-delivered or as-modified configuration of the product as well as of any replaceable components within the product along with the associated product/technical data.		X	U
• Traceability of requirements from the top-level documentation through all subordinate levels has been documented.		X	↓
• The results of configuration audits, including the status and final disposition of identified discrepancies and action items have been recorded.		X	
• The status of proposed engineering changes from initiation to final approval and contractual implementation has been recorded and reported.		X	↓

Product and Technical Data

Evaluation Criteria	Milestone B	Milestone C	Milestone FRP
1. Integrated Digital Data Environment			
• A concept of operations for an Integrated Digital Data Environment (IDDE) is developed, implemented and managed throughout the system life cycle to ensure information/data interoperability with other programs and their interfacing logistics systems.	X	U	U
• Logistics product/technical data for new systems (depending on PBL strategy and applicable logistics product/technical data from interfacing legacy systems) should be acquired, converted, accessed and/or developed in digital electronic form to perform life-cycle support using digital operations.		X	↓
• Electronic data interchange on-line access and automation issues are addressed starting with development of the information exchange requirements and continuing through the IDDE concept of operations.		X	↓
• Authoritative Data Sources and the associated change authority have been identified.		X	↓
2. Product/Technical Data Package and Publications			
• A product/technical data management plan, guided by the IDDE concept of operations, including change control processes and in-process reviews as appropriate has been developed and validated.	X	U	U
• A determination has been made regarding ownership of product/technical data package rights and COTS licensing agreements.	X	U	↓
• The product/technical data package is consistent with the maintenance plan and provides a sufficient level of detail for reprocurement, upgrade, maintenance and repair of hardware. The product/technical data package normally includes: – Specifications, technical manuals, publications, engineering drawings/product data models and special instructions such as for unique manufacturing and test processes. – Interchangeability, form, fit and function information. – Safety requirements. – Preservation and packaging requirements. – Test requirements data and quality provisions. – Preventative maintenance system/maintenance requirements card. – Environmental stress screening requirements.		X	↓
3. Technical Manuals			
• Contents are validated on production configured system or equipment by fleet personnel.		X	U
• Technical manuals include: – Required readability/comprehension levels. – Operational and maintenance instructions. – Parts lists and breakdowns. – Related technical information or procedures exclusive of administrative procedures.		X	↓
• COTS manuals have been evaluated using MIL-HDBK-1221.		X	↓
• The contents of the product/technical manuals have been integrated into the IETM, considering the following: – The contents meet Web Enabled Navy requirements as applicable. – The Standard Generalized Markup Language (SGML)/eXtensible Markup Language (XML) format is selected over contractor-unique or proprietary systems to ensure interoperability for subject data throughout its life cycle as applicable. – The phased development schedule is in parallel with the system development, including validation and transition to the Navy.		X	↓

Product and Technical Data

Evaluation Criteria	Milestone B	Milestone C	Milestone FRP
– Operator and maintainer training are embedded and job performance aids included. – Legacy data is converted and incorporated. – Software is used to create, manage and update IETM. – The established IETM level is achievable and within the schedule.			

Environmental, Safety and Occupational Health

Evaluation Criteria	Milestone B	Milestone C	Milestone FRP
1. Environmental, Safety and Occupational Health (ESOH) Integration			
• A prevention program of ESOH hazards and management of ESOH issues where they cannot be avoided has been established as part of risk reduction.	X	U	U
• A Program Environmental, Safety and Health Evaluation (PESHE) has been developed that includes as a minimum: – A strategy for integrating ESOH considerations into the systems engineering process. – Identification of ESOH responsibilities. – An approach to identify ESOH risks, to prevent the risks, and to implement controls for managing those ESOH risks where they cannot be avoided. – Identification and status of ESOH risks including approval authority for residual ESOH risks (based on MIL-STD-882). – A method for tracking progress in the management and mitigation of ESOH risks and for measuring the effectiveness of ESOH risk controls. – A schedule for completing NEPA/Executive Order (E.O.) 12114 documentation including the approval authority of the documents (the CAE or designee [for joint programs, the CAE of the Lead Executive Component] is the approval authority for system-related NEPA/E.O. 12114 documentation). – Identification of hazardous materials (HAZMAT) used in the system and the plan for their demilitarization/disposal, as well as the remainder of the system.	X	U	U
2. Environmental Regulations – The National Environmental Policy Act (NEPA) is the basic charter for protection of the environment. It establishes policy, sets goals and provides means for carrying out environmental policy. The following comprise the NEPA			
• A POA&M is developed to identify significant program events to ensure NEPA or EO 12114 compliance. These may include: – Conducting tests utilizing test ranges. – Contracting for production. – Planning basing or home porting locations. – Planning new facilities to support the system.	X	U	U
• NEPA decisions result in one or more of the following: – Categorical exclusion. – Finding of No Significant Impact based upon an environmental assessment. – Record of decision based upon an environmental impact statement.	X	U	U
• Specific impact assessments should include: – Clean Water Act.	X	U	U

Environmental, Safety and Occupational Health

Evaluation Criteria	Milestone B	Milestone C	Milestone FRP
– National Pollutant Discharge Elimination System Permits and Marine Mammal Protection Act. – Clean Air Act. – Air permits. – National Emissions Standards for Hazardous Air Pollutants. – National Ambient Air Quality Standards. – Resource Conservation and Recovery Act. – Endangered Species Act.			
3. Safety and Health			
• Noise abatement is compliant with all Federal and state standards.		X	U
• Material toxicity is compliant with all Federal and state standards.		X	↓
• Personnel protective equipment is compliant with all Federal and state standards.		X	
• Acceptance/signoff of program environmental, system safety, and occupational health design risks shall be done by the appropriate managing level authority in accordance with MIL-STD-882/industry standard prior to initial operational test and evaluation.		X	
4. System Safety			
• System safety design requirements are specified.	X	U	U
• Hazard risk and assessment criteria are specified for operating and support personnel, facilities and the weapon system.	X	U	↓
• Hazard analysis is performed during the design process to identify and categorize hazards, including hazardous materials.		X	
• Corrective action is taken to eliminate or control the hazards, or to reduce the hazard to an acceptable level.		X	
• A closed-loop hazard tracking system is implemented.		X	
• Weapon System Explosive Safety Review Board approval is obtained as appropriate.		X	
• All systems containing energetic must comply with insensitive munitions criteria		X	
5. Hazardous Material Management			
• Hazardous materials prohibited in the weapon system design due to operation, maintenance and disposal costs associated with the use of such materials have been identified.	X	U	U
• Hazardous materials whose use cannot be avoided have been documented and communicated to the user and support installations. This includes an inventory of materials incorporated into the weapon system during production and those materials required for maintenance.		X	↓
• The program has a plan for tracking, storing, handling and disposing of hazardous materials.		X	
• Hazardous material findings and determinations are incorporated into the training program as applicable.		X	
6. Pollution Prevention Program			
• The pollution prevention program should identify impacts of the system on the environment, wastes released to the environment and associated source reduction opportunities.	X	U	U
• The program has a plan to recycle or dispose of system replaceable and disposable components; such as metals, plastics, electronic components, oils, coolants and refrigerants during system life and end of service life.	X	U	U

Facilities

Evaluation Criteria	Milestone B	Milestone C	Milestone FRP
1. Facility Requirements			
• The types of facilities required to support and sustain the new or modified system have been identified, such as: – Berthing space for ships (including utilities, dredging, special deck structural requirements for crane loads, and fendering systems). – Parking aprons and hangar space for aircraft. – Support facilities, supply warehouses, transit sheds, maintenance facilities, dry dock capability and training facilities (for both classrooms and trainers for operational training and maintenance training, including required product/technical data to ensure efficient/effective support of facilities). – Transient support requirements when the system requires some level of support for continental US and outside continental US activities that are not regular homeports/ support sites.	X	U	U
• The facilities support requirements are usually documented in the ILSP, LRFS and/or the Program's Facilities Management Plan or its equivalent.	X	U	U
• Basic facilities requirements have been developed in accordance with the NAVFAC P-72 (Department of Navy Facility Category Codes), NAVFAC P-80 (Facilities Planning Criteria for Navy and Marine Corps Facilities) and other appropriate documents (e.g., MIL-HDBKs) using the system's logistics support requirements.		X	U
2. Evaluation of Existing Facilities/Capabilities			
• System support and basic facilities requirements are provided to the Naval activities/ regions expected to support operations, maintenance, training and other logistical support related to the system. This is done on a periodic (e.g., annual) basis as the system is being designed and constructed so that the receiving support activities may factor support requirements into their facility planning efforts at the earliest possible time. One mechanism for accomplishing this may be a facilities planning/criteria letter issued by the program manager.	X	U	U
• Existing assets at each impacted shore activity have been evaluated (e.g., site survey) to determine if they can be used to satisfy the basic facilities requirements associated with the new or modified system. If not suitable, the rationale is documented and analysis of viable support alternatives is done to develop a solution for providing adequate facilities to support delivery of the system. Alternatives to be considered include: – Outsourcing (contractor operates Government-owned facilities or their own). – Privatizing (Government buys services and relinquishes all interest including real estate and personal property). – Leasing. – Repair/renovation/conversion of existing assets to satisfy requirements. – New construction to provide required capability.		X	
• If repair/support facilities cannot be completed in time to meet mission requirements and satisfy the basic facilities requirements, a designated source of repair/support or work-around has been identified and received fleet concurrence.		X	

Facilities

Evaluation Criteria	Milestone B	C	FRP
3. New Construction			
• Environmental documentation planning/completion IAW NEPA /EO 12114 for new construction or modification of existing facilities	X	U	U
• The program has assessed (e.g., site surveys and trade studies) all means of satisfying a facility requirement prior to selecting the use of Military Construction (MILCON).	X	↓	↓
• For construction or alterations less than $750,000, the program office has identified funding to support the construction, and contract award is in process.	X		
• For projects in excess of $750,000 (classified as MILCON), Congressional authorization and funding has been approved.	X		
• Estimates of facility requirements and associated costs have been refined and detailed project documentation and cost estimates have been developed.	X		
• Funding for MILCON and other construction projects is available in the budget.		X	
• Construction on MILCON projects has been initiated and is on track to support introduction of the new or modified system to the fleet.			X

Computer Resources and Software Support

Evaluation Criteria	Milestone B	C	FRP
1. Computer Resources Life Cycle Management Plan			
• A computer and software security plan, including safety, has been developed.	X	U	U
• Computer and software product/technical data and the supporting infrastructure are outlined through an IDDE concept of operations that supports the total life-cycle management of associated product.	X	↓	↓
• Computer and software product/technical data and its supporting infrastructure are outlined through an IDDE concept of operations that supports the total life cycle management of associated product.	X		
• Software functional requirements and associated interfaces have been defined.	X		
• Gap analysis has been performed on candidate COTS software to identify functionality shortfalls.	X		
• Requirements for system firmware and software documentation have been identified and procured.	X		
• A software CM plan has been developed or is included as part of the CM plan (see Configuration Management) to assess the applicable software CM requirements.	X		
• Software testing requirements have been identified and integrated into the overall system test program.	X		
• Measures of effectiveness have been established for software.	X		
• A software support activity has been designated/established.		X	
• A software development plan has been developed and reflects program milestones.		X	
• Software maturity can and has been measured.		X	
• Required software data rights have been obtained.		X	
• CBM+ software is developed for the operating and maintenance system for diagnostics and prognostics, as applicable.		X	↓

Reviewing the Contract

The solicitation package or contract should be assessed for adequacy of supportability requirements. The review should include an assessment of the adequacy of:

- ILS and related RAM requirements.
- Required ILS and related RAM analyses and the use of their results to impact design.
- Compliance with critical completion and delivery dates.

The solicitation package for the next acquisition phase, if available, should also be reviewed to ensure that it is adequate to meet the requirements of the ILSP or other program documentation. This is critical for ensuring that planning is complete. For instance, the ILS factors above may show that a particular metric may need to be complete by Milestone C. During the ILA for entrance into Phase B, the solicitation package should be assessed to ensure that planning and requirements to meet those metrics are in place.

Reviewing ILS Factors against the Integrated Master Program Schedule

A program's overall schedule reflected in the integrated master program schedule can range from being an imposed schedule to one that has some flexibility. The logistics support tasks for each ILS factor must be planned, scheduled and integrated with other program activities. The sequence and dependencies of one task upon another must be included in determining schedule realism. The integrated master program schedule timelines must be achievable within funding constraints when considering a bottoms-up view of all required detail tasks and their inter-dependencies. The ILSP should include the detail POA&M and schedule for each ILS factor for focused ILS management planning/implementation.

One or more project management charting tools are commonly used to schedule and organize program tasks, graphically showing their schedule and dependencies. The effectiveness of a program's logistics support plan must be reviewed in context of the overall program schedule and the design/development milestones. However, logistics schedules that are allocated from programmatic top-down requirements may not be achievable within the allocated funding and manpower, especially when considering logistics ability to influence the design for optimized supportability. The program integrated master schedule must also factor in the schedule requirements for each logistics factor, based on a bottom-up task analysis to ensure realism. Otherwise, logistics efforts typically become focused on documenting the design without influencing the design.

The detailed logistics support tasks developed and integrated into the overall program integrated master schedule must be realistically achievable considering the sequence of all dependent and interconnected tasks to minimize program risks. All tasks that feed into achieving ILS milestones and assessments should meet at those milestone/assessment nodes. The critical paths should be reviewed to identify any logistics tasks, and used to identify the actual start/end dates to review progress of each task against its schedule, including the timeliness of the logistics tasks. Schedules, for example, should reflect tasks such as BIT/testability design, maintainability analyses/verifications, FMECA, special test equipment identification and development of the embedded and on-board training capabilities. They must also ensure they are completed by Design Readiness Review (formerly critical design review); thus allowing adequate time to develop and proof/validate the IETM/support documentation before completing all of the tasks associated with the development, coordination and approval of the school-house training curriculum. Optimistic, success-oriented schedules that do not reflect realistic conditions masks eventual program cost growth, schedule delays or failure.

While it would be cumbersome to provide a complete integrated master program schedule in this document, a generalized notional schedule is shown for illustrative purposes at the top of Figure 2, with a magnified view of a notional design schedule. Below it is a series of tasks in an ILS factor that require

completion by the end of the design; otherwise the slip will significantly effect the overall schedule. The tasking for the Notional ILS Project needed to complete the ILS schedule are listed below. While it appears that the ILS project (seven weeks) will be completed prior to the completion of design (eight weeks), it is actually a high-risk schedule since the transitions between tasks 1 and 2, 2 and 3, and 4 and 5 are not known and have not been factored into the schedule. Therefore, the ILS project will most likely be significantly behind schedule.

Notional ILS Project

Notional Tasks

1. Duration – 2 weeks. Approval to proceed from task 1 to task 2 requires approval by outside agency.
2. Duration – 1 week. Progress depends on meeting RAM requirements from testing to be performed concurrently
3. Duration – 2 weeks
4. Duration – 1 week. Progress depends on environmental compliance and certification
5. Duration - 1 week

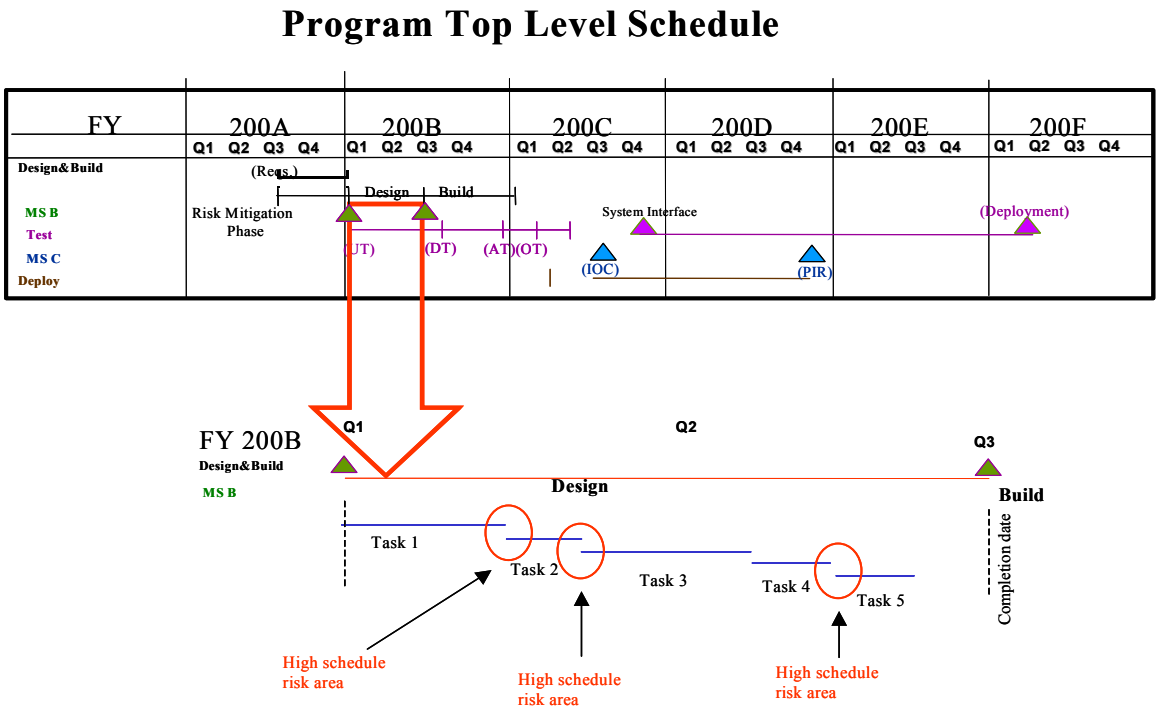

Figure 2. Notional Program Schedule

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PART II
Logistics Assessment Management

Objective

The objective of Part II is to provide guidance on the organizing, planning, conducting, documenting and reporting of an Independent Logistics Assessment (ILA).

Team Membership

The Program Executive Officer (PEO), Direct Reporting Program Manager (DRPM) or Systems Commander (SYSCOM) or designee is responsible for designating a qualified team leader and providing resources to establish an assessment team. The team leader is responsible for selecting qualified team members. Qualifications for team leaders and members are as follows:

- Independence: To avoid a conflict of interest, team leaders and members must be independent of the program. Independence is defined as an individual who is not actively involved in the design, test, production or logistics planning of the program, either from the program office, supporting field activity or a member of the contractor activity.
- Education: Defense Acquisition Workforce Improvement Act (DAWIA) Level III or equivalent certification for team leaders and DAWIA level II or equivalent for team members in Acquisition Logistics, Systems Engineering or Program Management career fields is required.
- Experience: Team leaders must have participated in at least one ILA. Team members must work in a systems engineering or logistics related function.
- Fleet representation: As the users/maintainers of the system being reviewed, fleet representatives are critical to the success of an ILA and must be invited to participate. Fleet representatives do not need to meet the education or experience requirements stated above. Coordination with the fleet should be done through Fleet CFFC (N412).

The team leader is responsible for the following actions:

- In conjunction with the program office, defining the scope of the assessment.
- Drafting correspondence for the conduct of the ILA.
- Identifying stakeholders.
- Coordinating security requirements.
- Selecting assessment team members to include members from stakeholder's organizations and assigning areas for review.
- Ensuring each Integrated Logistics Support (ILS) factor is assigned for review.
- Ensuring documentation provided is appropriate for the assessment phase.
- Setting the agenda for the ILA.
- Conducting an in-brief, daily out-briefs and final out-brief to the program office representatives.
- Interfacing between the program office and the team members.
- Issuing the final report.
- Working with the program office, as requested, to assist in the corrective action process.

Scheduling and Notification of ILAs

ILAs must be scheduled and completed prior to milestones B and C as well as the Full Rate Production Decision Point. The schedule must allow time for the ILA to be conducted and the report issued to all stakeholders at least two weeks prior to the decision point or any related meetings supporting the decision point. The PEO, SYSCOM or DRPM must annually provide a schedule of ILAs to support planned milestone decisions to the Deputy Assistant Secretary of the Navy for Logistics (DASN-L), Chief of Naval Operations (CNO(N4)), and Commandant Marine Corps for Marine Corps programs. To ensure proper planning, these schedules should be published by the second week in September covering ILAs for the next fiscal year. Formal correspondence announcing the ILA should be sent by the program manager stating the dates of the ILA, the scope, the team members, the meeting site, the schedule, the agenda, security and point of contact information for the ILA. The correspondence should be distributed to the participants and stakeholders at least four weeks prior to the ILA. In addition to the Deputy Assistant Secretary of the Navy for Logistics (DASN-L) and Deputy Chief of Naval Operations (DCNO) N4, stakeholders include CNO (N00T, N12, N40, N41, N412, N45, N46, N09, N7), Naval Supply Systems Command (NAVSUP) (4B), Naval Safety Center (NAVSAFCEN), Commander, Fleet Forces Command (CFFC) (N412), Navy Education Training Command (NETC) (N53), cognizant PEO/DRPM/SYSCOM and Naval Facilities Command (NAVFAC) (BDD). For Marine Corps programs, stakeholders are Commandant of the Marine Corps (Deputy Commandant, Installations and Logistics) (CMC(I&L)), MCCDC (ERD), Commanding General, MARCORSYSCOM and Commanding General, Marine Corps Logistics Command (CGMARCORLOGCOM).

Documentation Request

All team members should be aware of applicable policy directives as part of the assessment process. Each team member should also review program documentation affecting his or her assigned area. Documentation should be received prior to the ILA so that team members can review them in advance. The Documentation Request List provided in Appendix B should be used as a baseline for forming the documentation request and tailored to match the program and phase. The scope and depth of logistics support information in these documents can vary significantly from program to program and by acquisition phase. The program office is responsible for providing the required information to the ILA team to minimize time spent to obtain documentation time during the review.

Meetings and Presentations

Prior to, during, and at the completion of an ILA, it is critical that meetings and presentations be conducted to ensure all individuals participating in the ILA understand the process. A discussion of these meetings and presentations are provided below to ensure that there is a standard ILA assessment and reporting process in place.

Pre-Assessment Meeting
The pre-assessment meeting is conducted to establish coordination/planning between the team leader, program manager and logistics manager. The following issues should be addressed:

- Confirmation of the responsibilities of the program office, team leader and team members.
- Confirmation of the purpose and scope of the review.
- Discussion of specific review procedures.
- Coordination of the availability and location of ILS and program documentation (a listing of available documents should be prepared prior to the assessment for distribution to team members at the pre-brief).
- Clarification of specific logistics assessment schedule of events/agenda.
- Identification of the location of all assessment activities.
- Availability and identification of program office personnel to respond to logistics assessment team member questions.

- Identification of security requirements and arrangements, as well as access to classified material.
- Discussion of conduct of the assessment.
- Discussion of issuance of draft and final reports.
- Discussion of post-review procedures to include follow-up on identified issues (as required).
- Issuance of a certification statement reflecting the results of the assessment.

Opening Brief
The opening brief provides the logistics assessment team with a foundation of information regarding program background, the current status, logistics structure and a review of what is expected during the assessment. It is important to recognize that assessment team members may not be familiar with the subject program and the opening briefs are the best opportunity to impart the needed information/ background to understand the program in its proper context. The opening brief consists of the following:

- **Program brief**. The purpose of the program pre-brief, normally presented by the program manager or the deputy program manager, is to impart a basic understanding of the acquisition program. It should address:
  - A general description of the system (physical as well as functional).
  - System interfaces.
  - The planned operational use of the system.
  - Support strategy (including unique considerations and performance requirements).
  - Current status of the program (including any pertinent history and program peculiarities).
  - Size of the program (in terms of number of units and dollars).
  - Funding status.
  - Organizational structure of the program office.
  - Acquisition strategy (including contract status) and milestones.
  - Status of the program's documentation.
  - Scope of the review.
  - Program office and logistics points of contact.

- **Logistics brief**: The purpose of the logistics brief, normally presented by the logistics manager, is to address each of the areas of supportability that will be reviewed by the logistics assessment team. It should address:
  - Structure of the ILS management team and organization.
  - ILS schedule and milestones.
  - Status of ILS documentation (e.g., approval status).
  - Status of each of the support areas to be reviewed.
  - Rationale for not reviewing a specific area (if applicable).
  - Contract vehicle status.
  - Names and phone numbers of program office counterparts.
  - Any other needed information.

- **Team brief**: The purpose of this brief, presented by the ILA team leader, is to provide information to logistics assessment team members and program personnel on the conduct of the review. This should address the following:
  - A review of the responsibilities of the team leader and team members.
  - Specific logistics assessment schedule of events/agenda.
  - Instructions on documenting observations.
  - Format.
  - Guidance on determining the time frame in which recommended actions need to be completed (e.g., does the action need to be completed before the program decision milestone or contract award?).
  - Post-review procedures.

Periodic Progress Briefs
These briefs are conducted during the ILA at a time agreed upon by the team lead and the program office representative. The purpose is to brief the program office of any issues noted during the assessment as well as to resolve any issues from the previous progress brief that were unresolved. During these briefs, the ILA lead will:

- Discuss new issues with the program manager.
- Obtain the program manager's concurrence or non-concurrence on each issue/observation as well as on the team leader's logistics certification recommendation.
- Conduct follow-up on issues from the previous progress brief.

Final Out-Brief
This brief is presented to the participants and the program manager at the conclusion of the ILA, to discuss the results of the assessment when the draft report is completed. The purpose is for the team lead to brief the program manager, the logistics manager and all others involved with the review, on the final assessment results, the draft report and the rating, to ensure that the content of the report is understood. The ILA lead discusses the following with the program office:

- Summary of each finding.
- Rating for the program.
- Any required follow-up discussion on issues that require resolution or cannot be resolved and require elevation.
- Final report coordination prior to issuance of the final report, to ensure changes to content have not occurred while editing the final report.

ILA Report

The team leader is responsible for preparing the logistics assessment report, coordinating it with the program office and submitting it to the cognizant PEO, DRPM or SYSCOM. The report will be used as a basis for the ILS certification decision by the PEO, DRPM or SYSCOM, which will be forwarded to the Milestone Decision Authority, DASN-L and CNO-N4 and stakeholders with a certification statement. The report should contain, as a minimum, the following information:

- The purpose, scope and dates of the assessment.
- A brief description of the system/equipment.
- A listing of team members and areas covered.
- All deficiencies/issues identified during the assessment. The report must clearly distinguish between issues that need to be resolved, prior to the milestone, and issues that may be resolved in different time frames (e.g. prior to contract award, release of the request for proposal, and operational evaluation).
- Based on the issues within an ILS factor, each ILS factor should receive a rating of Red/Yellow/Green, and rationale for areas not assessed. A summary of ratings should be provided at the beginning of the report (Figure 1).
- An overall ILS program certification recommendation, based on the Rating and Certification Criteria (Figure 2).
- Recommended corrective actions and timelines.

Logistics Factor	Rating
ILS Management	Green
ILS Budgeting and Funding	Green
Design Interface	Yellow
Maintenance Planning	Green
Support Equipment	Green
Supply Support	Green
Manpower, Personnel and Training	Yellow
Packaging, Handling, Storage and Transportation	Green
Configuration Management	Red
Product and Technical Data	Yellow
Environmental, Safety and Occupational Health	Green
Facilities	Green
Computer Resources and Software Support	Green

Figure 1. Example of Summary of Ratings

Rating and Certification Criteria

A rating should be assigned to each finding and ILS factor and an overall certification should be given to the program using the rating criteria below. This rating should be used to determine if the program is ready to proceed logistically.

Factor Rating Criteria		
MAJOR (Red)	**MODERATE (Yellow)**	**MINOR (Green)**
COST Supportability cannot be achieved within the planned for or current funded profile, Or The funding profile is not adequate or identified.	**COST** Funding for supportability is not available when needed but it is forthcoming (workaround available)	**COST** Minor or no impact to supportability
SCHEDULE There are delays in completion of logistics tasks that significantly impact the ability to meet major logistics milestones or establish support capability.	**SCHEDULE** There are delays in completion of planned logistics tasks that impact the ability to meet major logistics milestones or establish support capability, however, workarounds have been identified such that the impact on supportability is minimal.	**SCHEDULE** Minor or no impact to supportability
PERFORMANCE Logistics performance requirements cannot be met.	**PERFORMANCE** Logistics performance requirements will not be met within budget or schedule, but they can be if resources, which have been identified and are available, will be applied Or Supportability will not be significantly impacted.	**PERFORMANCE** Minor or no impact to supportability

Program Certification Criteria		
NOT CERTIFIED (RED)	**CONDITIONALLY CERTIFIED (YELLOW)**	**CERTIFIED (GREEN)**
A logistics program is **NOT CERTIFIED** when there are major issues or actions outstanding that have substantial impact on the program's ability to meet logistics performance requirements within cost and schedule. Further, there are no plans or workarounds in place that will correct the deficiency. The program should not proceed to a milestone decision until detailed action plans are	A logistics program is **CONDITIONALLY CERTIFIED** when there exists issues of moderate risk with detailed action plans established and in place. However, the resolution of the deficiency will not occur prior to the milestone decision and requires continued monitoring. Once the action is completed, there is no expected degradation to logistics performance requirements and	A program is logistically **CERTIFIED** when there are no or only minor issues. Each issue has an approved mitigation plan in place to eliminate the deficiency prior to the milestone decision. There is no impact in the program's ability to meet logistics performance requirements within cost and schedule.

Program Certification Criteria		
developed and in place, which meet minimum logistics performance requirements with acceptable impacts to cost and schedule. Once these plans are in place and properly resourced to the satisfaction of the ILA team lead, the program is considered to be conditionally certified.	minimal impact to cost and schedule. Once identified actions are resolved as verified by the ILA team lead, the program is considered logistically certified.	

Figure 2. Rating and Certification Criteria

The team leader should obtain the program manager's concurrence or non-concurrence on each issue/observation as well as on the team leader's logistics certification recommendation. An indication of the program manager's concurrence/non-concurrence should be noted in the report. After the program manager's debrief, the team leader should update the draft logistics assessment report prior to distribution.

Corrective Action

Corrective action should start as soon as possible, even during the ILA. After the report is officially released, the program office should establish a formal plan of action and milestones for corrective actions for any risks/issues identified as Yellow or Red. A corrective action strategy and verification should be coordinated with the team leader. Issues that cannot be resolved between the team lead and program office should be adjudicated by DASN-L and CNO(N4).

For those actions that require completion prior to issuance of ILS Certification, the program manager is to provide written status on the completion of each action to the ILA team lead and the cognizant Milestone Decision Authority, with a copy to DASN-L and CNO (N4), prior to any decision meetings. The responsibility for tracking and resolution of all of the issues in the report remains with the cognizant PEO/DRPM/SYSCOM organization.

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Appendix A
Relationship between Reliability, Availability, Maintainability and Logistics

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Objective

The objective of this Appendix is to provide a cross reference and define the relationship between reliability, availability and maintainability and the Integrated Logistics Support (ILS) Factors.

Reliability, Availability and Maintainability (RAM) requirements and tasks are primary sources of information and serve as drivers of many logistics support factors. They provide a critical logistics support interface that can influence design decisions, optimizing long-term system supportability. This chart identifies some typical key RAM requirements and tasks, their influence on ILS elements and guidance in reviewing these factors. When assessing a specific ILS area, RAM requirements should be reviewed to determine if they will be met. This table should be used as a cross-reference to determine the effect reliability will have on the ILS factor under review.

Reliability Measures	Relationship to ILS Factors
Mean Time Between Failure (MTBF) is generally defined for a particular operating time interval as the total functional life of a population of an item, divided by the total number of failures within the population. The definition holds for time, rounds, miles, events, or other measures of life units. MTBF is often specified in varying forms to include Mean Time Between Operational Mission Failures (MTBOMF) and Mean Time Between Mission Critical Failures (MTBMCF)	• Maintenance Planning: The MTBF impacts the frequency of preventative and scheduled maintenance. • Supply Support and Support Equipment (SE): The MTBF impacts the range and depth of spares and drives provisioning requirements • Manpower, Personnel and Personnel Training: The MTBF drives the frequency and scheduling of maintenance, and therefore drives the manpower needed to perform these maintenance or repair functions. • Facilities: The MTBF impacts the number and items turned in for repair, directly effecting the space and power requirements for repair and storage. • Funding: The MTBF affects the frequency of repair and preventative maintenance, spares and manpower requirements and has a direct relationship to operation and maintenance and funding requirements. Funding to achieve higher MTBFs during the development phase results in higher system availability and lower life cycle costs.
Mean Time To Repair (MTTR) is the average elapsed time (clock hours) for corrective maintenance (including testing times for fault detection, isolation and verification of corrective action). Maintainability is often specified in other forms such as Maximum Time To Repair and Mean Corrective Maintenance Time for Operational Mission Failures (MCMTFOMF).	• Maintenance Planning: The MTTR impacts the duration of the down time for repairs. • Manpower and Personnel: The MTTR impacts the duration of the repair and therefore the manpower required. • Funding: The MTTR effects the amount of manpower required for maintenance and has a directly impacts funding requirements. Funding to achieve lower MTTRs during the development phase results in higher system availability and lower life cycle costs.
Mean Logistics Delay Time (MLDT) is the average time a system is unavailable due to logistics system delays associated with the maintenance action (i.e., obtaining required parts (Mean Supply Response Time, (MSRT) or other logistics resources (Mean Administrative Delay Time ($M_{Adm}DT$), and Mean Outside Assistance Delay Time (MOADT) and other delays).	• Maintenance Planning: The MLDT may drive the level of repair since the time to obtain spares may determine if the weapon system is spared at the system level or component level. • Supply Support: The amount of spares required is directly related to the MLDT; the greater the MLDT, the more spares will normally be required to be stored locally to meet availability requirements.

Reliability Measures	Relationship to ILS Factors
Operational Availability (Ao) is the percentage of time that a system will be ready to perform satisfactorily in its intended environment. It is generally defined as Up Time/(Up Time + Down Time) or, $\frac{\text{MTBF}}{(\text{MTBF} + \text{MTTR} + \text{MLDT})}$	• See MTBF, MTTR and MLDT for impact on logistics support elements. • Maintenance Planning: Ao analyses may assist in determining the optimum number of repair facilities depending on the maintenance and sparing concept.
System Analyses (includes Failure Modes, effects and Criticality Analysis (FMECA), Single Point Failure Analysis (SPFA) and Fault Tree Analysis (FTA)) from the system level to the lowest part level are performed as the design progresses, to assess the design robustness and overall reliability. **Worst Case Analyses** are performed to identify tolerance stack-up as well as drift in circuit parameters. Calibration and measurement systems are included in these analyses.	• Maintenance Planning and SE: These analyses assist in determining the failure effects which drive the trouble shooting criteria, strategy and equipment for fault detection of failure modes. • Supply Support: These analyses identify critical components and their failure modes so they can be adequately spared to optimize repair time and corrective action. • Product/Technical Documentation: These analyses will assist in determining the troubleshooting description, requirements and diagnostics in the technical documentation by identifying failures and their effects. • Environmental, Safety and Occupational Health (ESOH): These analyses may identify hazardous failure modes. • Manpower, Personnel and Training: These analyses may identify specific manpower and training requirements for special operating and maintenance conditions/procedures. • Funding: Design changes or other corrective actions resulting from these analyses may reduce manufacturing, operation and maintenance cost. If these analyses are not performed, design deficiencies may not be identified until later during deployment, negatively effecting the program's sustainment cost.
Sneak Circuit Analysis is performed to identify unintended product operating modes and is performed as a minimum on critical circuits, circuits that perform frequent switching functions, and areas of safety concern.	• Maintenance Planning and SE: Results of the sneak circuit analysis will assist in determining the troubleshooting and PMFL procedures by identifying potential sneak circuits and failure items. • ESOH: These analyses may identify failure modes that are hazardous. • Funding: These results are similar to the funding impacts found in Systems Analyses reliability measures.
Thermal Analysis is performed to identify thermal conditions that require corrective actions and includes results from analyses of the detail designs, thermal surveys/tests, and operational tests. **Stress Analyses** (mechanical/finite element, electrical, and thermal) are conducted to identify design margins and assess derating.	• Supply Support and SE: These analyses identify potential compromised reliability and stressed items, which effect the sparing requirements. • ESOH: These analyses may identify failure modes that are hazardous. • Maintenance Planning: The results of these analyses may require special procedures to be followed during maintenance actions. • Funding: The results are similar to the funding impacts found in the Systems Analyses reliability measures.

Reliability Measures	Relationship to ILS Factors
Reliability Predictions/Failure Reporting and Corrective Action Systems are used to estimate the reliability of an item.	• All ILS Areas: Provides information on whether the reliability (e.g., MTBF) will be achieved, exceeded or missed, so that adjustments can be made to sparing (supply support), maintenance planning, manpower and personnel requirements, training and Packaging, Handling, Storage and Transportation (PHS&T). • ESOH: These analyses identify failure rates to consider in determining criticality of hazards.
Design Limit/Life Testing – Qualification testing is conducted to measure system hardware compliance with performance and design requirements. – Accelerated life testing is conducted using higher than normal stresses to estimate the life of an item under normal operating conditions – Step stress testing is a method of performing accelerated life testing to determine design margins by using progressively higher levels of stress.	• Maintenance Planning: Test information is used in determining service life and technical refresh requirements. • Supply Support: Test information is used to substantiate reliability information that will determine spares requirements. • Funding: Design changes or other corrective actions resulting from these tests may reduce manufacturing, operation and maintenance cost. If these tests are not performed, design deficiencies may not be identified until later during deployment, negatively affecting the program's sustainment cost.
Design for Testing/Built-In-Test (BIT) objectives are to achieve the required performance monitoring, fault detection/localization and fault isolation capabilities at the appropriate maintenance levels with the optimum mix of BIT, semi-automatic test and general purpose manual test equipment.	• Maintenance Planning: BIT effects testability and diagnostics by optimizing the efficiency of troubleshooting and fault isolation localization, and assist in determining the level of repair. • Supply Support: Properly designed BIT can reduce the demand for spares as a result of fewer false alarms. • SE: The level of BIT implementation directly effects the extent of special test equipment or tools required to diagnose failures. • Technical Documentation: BIT impacts the amount of technical publications required to diagnose failures. Documentation required to assess and troubleshoot failures is eliminated as BIT is optimized. • Manpower, Personnel and Training: BIT can reduce manpower, personnel and training requirements since it reduces diagnostic time, skills and training to perform diagnostics. • Funding: BIT decreases cost for diagnostics, downtime and repair of units improperly determined to have failed.
Manufacturing Planning/Screening integrates actions required to produce, test and deliver acceptable systems on schedule and at minimum cost.	• Maintenance Planning and Supply Support: Manufacturing/screening effects down time and spares since escapes from manufacturing will decrease reliability and increase requirements for parts. • Funding: Manufacturing/screening effects decreases sustainment cost as a result of discovering failures in the factory rather than after deployment.

Reliability Measures	Relationship to ILS Factors
Parts and Materials Selection – This utilizes a disciplined design process including adherence to specific derating guidelines and the use of qualified manufacturers lists to standardize parts selection.	• PHS&T: PHS&T is effected because parts robustness and environmental sensitivity is a significant concern and special handling and transportation requirements (e.g., electrostatic discharge, shelf life, shock, vibration, humidity and electromagnetic interference) may be required. • ESOH: The selection and application of parts and materials may be limited by prohibited and environmentally unfriendly materials, as well as safety concerns. • Maintenance Planning and Supply Support: The selection and application of parts and materials effects the type and frequency of maintenance required, as well as the provisioning of spares. • Manpower, Personnel and Training: The selection and application of parts and materials may effect the operating and maintenance training requirements, especially for unique items or non-standard items. • Product/Technical Data: Depending on the acquisition and maintenance philosophy, the selection of unique items or non-standard items may effect the technical data requirements. • Funding: The selection and application Affects sustainment cost as a function of parts quality, availability and obsolescence. • Configuration Management: Identifies specific parts and material characteristics that must be under configuration control to ensure long-term performance and supportability.

Appendix B
Documentation Request List

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Objective

The objective of this Appendix is to provide a baseline documentation request list as described in Part II of this handbook.

Documentation Checklist

The Documentation Request List provided below should be used as a baseline for establishing the documentation request. It should be tailored to match the program and phase, as the scope and depth of logistics support information in these documents can vary significantly from program to program and by acquisition phase. Program logistics documents may have been developed by a program not only to meet statutory or regulatory requirements, but also for program management discretionary purposes. Information content, not quantity or format of the documents, is critical for a successful ILA. The program office provides the applicable information to the Independent Logistics Assessment (ILA) team to enable an effective assessment without having to spend time during the review to obtain documentation. Documentation should be received prior to the ILA for advance review by the team

Milestone B Documentation. The following are documents that should be available as applicable for review during an ILA at Milestone B:

Typical Document Request	Description	Source
Acquisition/Integrated/ Joint/ Logistics Support Plan	Describes the overall ILS program and includes all requirements, tasks, schedules and milestones for each ILS element integrated into the overall program milestones.	SECNAVINST 5000.2, DFARS 207.1
Acquisition Plan	Defines the specific actions planned by the program manager to execute the approach established in the Acquisition Strategy and to guide contractual implementation.	SECNAVINST 5000.2, FAR 7.104 and 7.105, DFARS 207.1
Acquisition Program Baseline (APB)	Represents the program as it is expected to be produced or deployed. The baseline contain only those program cost, schedule and performance parameters (both objectives and thresholds) that, if thresholds are not met, will require the milestone decision authority to reevaluate the program and consider alternative program concepts or design approaches.	10 USC 2435 DODI/ SECNAVINST 5000.2
Acquisition Strategy	Describes the business and technical management approach to achieve program objectives within the resource constraints imposed. It provides the framework for planning, directing, contracting for and managing the program. It provides the basis for formulating functional plans and strategies (e.g., acquisition plan, Test and Evaluation Management Plan and the Systems Engineering Management Plan).	DODI/ SECNAVINST 5000.2
Analysis of Alternatives (AoA)	Provides an analysis to aid decision makers by identifying risks, uncertainty and the relative advantages and disadvantages of alternatives being considered to satisfy a mission need. The AoA identifies the sensitivity of each alternative to possible change in key assumptions.	DODI/ SECNAVINST 5000.2

Typical Document Request	Description	Source
Business Case Analyses (BCA) for Performance Based Decisions and support decisions.	Evaluates alternative solutions for obtaining best value while achieving operational requirements balancing cost, schedule, performance and risk.	DODI/ SECNAVINT 5000.2. PBL Guidance Directives
Command, Control, Communications Computers and Intelligence Support Plan (C4ISP)	Identifies C4ISP needs, dependencies and interfaces focusing on interoperability, supportability, and sufficiency concerns throughout a programs' life cycle. It provides a plan for acquisition category programs, including both information technology and national security systems that connect to the communications and information infrastructure.	DODI4630.8 DODD4630.5 CJCSI 6212.01 DODI 5000.2
Configuration Management Plan	Defines the technical and administrative directions and surveillance actions to identify and document the functional, allocated and physical characteristics of a configuration item, to control changes and record and report change processing and implementation status.	DODI/ SECNAVINST 5000.2
Contractual Documentation	Contains the program contractual requirements. This may include the statement of work/objectives, specification, contract deliverables, performance agreements and any other related contractual documentation that contains support criteria and requirements.	FAR/ DFARS SECNAVINST 5000.2
Cost Analysis Requirements Description	Describes the complete program and used as the basis for program office and DoD Component cost analysis teams to prepare program life-cycle cost estimates. It should be comprehensive enough to facilitate identification of any area or issue that could have a significant effect on life-cycle costs and therefore must be addressed in the cost analysis. It also must be flexible enough to accommodate the use of various estimation methodologies.	DODI/ SECNAVINST 5000.2
Design Reference Mission Profile	Provides a time history or profile of events, functions (often referred to as use or operations) and environmental conditions that a system is expected to encounter during its life cycle, from manufacturing to removal from service use.	SECNAVINST 5000.2 DFARS 207.1
Facilities Plan	Describes the plan to develop, identify and implement facility requirements to maintain, operate and test an item and to train personnel for its use.	SECNAVINST 5000.2 NAVFAC P-72 NAVFAC P-80

Typical Document Request	Description	Source
Initial Capabilities Document (ICD) and Capability Development Document (CDD)	Guides the Concept Refinement and Technology Development phases of the acquisition process and supports the Milestone A decision. The ICD includes a description of the operational capability gap, threat, shortcomings of existing systems and Command, Control, Communications Computers and Intelligence Support Plan (C4ISP) architectures, capabilities required for the system, program support, force structure, Doctrine, Organization, Training, Material, Leadership and Education, Personnel and Facilities analysis and schedule/program affordability for the system. Equivalent to the mission needs statement. Includes the operational performance parameters necessary for the acquisition community to design a proposed system and establish a program baseline. The performance attributes stated include key performance parameters, thresholds and objectives to guide the development and demonstration of the proposed increment. Equivalent to the operational requirements document.	CJCSI 3170.01 SECNAVINST 5000.2
Integrated Master/Management Plan (IMP)	Depicts the overall structure of the program and the key processes, activities and milestones in an event-based plan. It defines the accomplishments and criteria for each event in the plan.	Mil-Hdbk-881, IPPD best practice, Defense Acquisition Guidebook
Integrated Master /Management Schedule	Details the tasks and timing of the work effort in the Integrated Master Program Plan. It is a networked schedule that identifies all Master Integrated Program Plan events, accomplishments, criteria and the expected dates for each.	Mil-Hdbk-881, IPPD best practice, Defense Acquisition Guidebook
Life-Cycle Cost Estimate	Provides an estimate of the total cost to the Government of acquisition and ownership of a weapon system over its useful life. It includes the cost of development, acquisition, support and, where applicable, disposal.	DODI/ SECNAVINST 5000.2
Logistics Support Budgeting & Funding or similar document	Breaks out logistics funding by element and amount budgeted, the amount that will be received or decremented and appropriation type and impact if not fully funded as scheduled/planned.	SECNAVINST 5000.2
Maintenance Concept	Provides a brief description of the concept for operational maintenance, constraints and plans for support of items under development.	DODI/ SECNAVINST 5000.2
Manpower Estimate Report	For ACAT I programs, it provides the official statement of manpower requirements and risk assessment for achieving and supporting those requirements	Title 10, U.S.C., DODI/ SECNAVINST 5000.2

Typical Document Request	Description	Source
Master Acquisition Program Plan or Single Acquisition Master Plan	Provides a single source of program and logistics planning document that can incorporate all or some of the program and logistics documentation, with the exception of documents that have statutory or required formats.	AKS, SECNAVINST 5000.2
Memoranda of Agreement(s) (MOA) and Field Tasking Agreements	Delineates the roles and responsibilities, as well as agreements between the program office and supporting field activities, In-Service Engineering Agents, agreements between the Software Support activity, inter-service agreements etc. Field tasking agreements include funding documents that contain statements of work.	SECNAVINST (Various)
Navy Training Systems Plan (NTSP)	Identifies the resources required to establish and maintain an effective training program throughout the acquisition life cycle. It controls planning for meeting the training requirements and identifies personnel required to install, operate, maintain, or to otherwise use the system. The Master Acquisition Plan may also be used to document the NTSP.	SECNAVINST 5000.2 OPNAVINST 1500.76
Program Environmental, Safety and Health Evaluation (PESHE)	This document is a management tool used to help program managers identify and manage Environmental, Safety and Occupational Health (ESOH) hazards and risks, and determine how best to meet ESOH regulatory requirements and DoD standards. It is a living document that is continually updated and maintained throughout the progression of a program or project, from concept to disposal.	42 USC 4321 DODI/ SECNAVINST 5000.2
Risk Management Plan/Assessment	Describes the approach to identify, assess, mitigate and continuously track, control and document program risks.	DODI/ SECNAVINST 5000.2 NAVSO P-3686
Software Configuration Management Plan	Documents the procedures for identifying, organizing, controlling, and tracking the configuration of the software (i.e., selected software work products and their descriptions) and systematically controlling changes to the configuration, and maintaining the integrity and traceability of the configuration throughout the software lifecycle.	AKSS
Software Support/Sustainment Plan	Describes the activities to ensure that implemented and fielded software continues to fully support the operational mission of the software.	Defense Acquisition Guidebook, AKSS

Typical Document Request	Description	Source
Systems Engineering Management Plan (SEMP)	Describes the comprehensive, iterative technical management process that includes translating operational requirements into configured systems, integrating the technical inputs of the entire design team, managing interfaces, characterizing and managing technical risks, transitioning technology from the technology base into program specific efforts, and verifying that designs meet operational needs. It addresses life cycle activities using a concurrent approach to product and process development as well as sustainment.	DODI/ SECNAVINST 5000.2
System Safety Analysis/Plan	Provides the plans and analyses to achieve acceptable safety risk through a systematic approach of hazard analysis, risk assessment and risk management.	SECNAVINST 5000.2
Test and Evaluation Master Plan	Documents the overall structure and objectives of the test and evaluation program consistent with the ICD/CDD/CPD/acquisition strategy. It identifies the Development Test and Evaluation (DT&E), Operational Test and Evaluation (OT&E), Live Fire Test and Evaluation (LFT&E) activities and provides the framework to generate detailed T&E plans.	DODI/ SECNAVINST 5000.2
Training Planning Process Methodology	Provides a methodology to determine manpower, personnel and training requirements to support the planning and programming process and the Navy Training Systems Plan.	OPNAVINST 1500.76

Milestone C
In addition to the documents listed in the "Milestone B" list, the following should be available as applicable for review during a Milestone C ILA.

Typical Document Request	Description	Source
Capability Production Document (CPD)	Narrows the generalized performance and cost parameters from the CDD into more precise performance estimates for the specific production system increment. The CPD is finalized after the design readiness review.	CJCSI 3170.01 SECNAVINST 5000.2
Computer Resources Life Cycle Management Plan	Describes the development, acquisition, test and support plans over the life cycle of computer resources integral to, or used in, direct support of systems. May be a part of the ILS Plan.	AKSS
COTS Refreshment plan/program	Defines the plan to avoid obsolescence in the delivered systems. The planning for technology refresh and insertion is a part of the systems engineering process and includes market research over the life of the system to identify potential replacements in anticipation of end-of-life issues.	Defense Acquisition Guidebook, AKSS
Development Test/Operational Test Results	Provides results from developmental and operational testing on a system.	DODI/ SECNAVINST 5000.2

Typical Document Request	Description	Source
Failure Reporting, Analysis & Corrective Action System	A closed-loop system for the identification of hardware/software failures/discrepancies, their analyses to root cause, implementation of corrective actions to prevent recurrence and verification of their effectiveness. Recording of data should be comprehensive to provide an accurate database for analyses.	SECNAVINST 5000.2 AKSS
Human Engineering Plan	Defines the plan to develop and implement human engineering design criteria, principles, and practices to achieve mission success through integration of the human into the system, subsystem, equipment and facility. The objectives are to provide work environments that foster effective procedures, work patterns and personnel safety and health, which minimize factors that degrade human performance or increase error. The objective is also to minimize personnel and training requirements within the limits of time, cost and performance trade-offs.	SECNAVINST 5000.2
Level Of Repair Analysis (LORA)	Provides an analysis to determine whether an item should be repaired or discarded and, if repaired, at what maintenance level. Analyses are performed and trade-off decisions are made based on mission requirements as well as economic and non-economic considerations.	SECNAVINST 5000.2
Maintenance Plan	Provides a brief description of the concept for operational maintenance, constraints and plans for support of items under development.	AKSS
Manufacturing Plan	Defines and integrates a sequence of activities to establish, implement and control production resources for efficient transition from development to production and continued manufacturing. The plan addresses all aspects of manufacturing/producibility engineering, manufacturing methods, production and material control, scheduling and manufacturing cycle times, personnel, tooling, defect prevention, etc.	Defense Acquisition Guidebook, DFARS 207.1
Planned Maintenance System (PMS) Documentation	Includes scheduled maintenance instructions provided on maintenance requirements cards and maintenance index pages. May be included in the interactive electronic technical manual.	SECNAVINST 5000.2
Post Production Support Plan	Identifies the plan to ensure continued economical logistical support and systems management of deployed systems after production cessation.	Defense Guidebook, AKSS
Preferred Parts Selection List/Approved Parts List	A list of parts or part types that meets the system design requirements over its life cycle and are either recommended or approved for use.	SECNAVINST 5000.2, DFARS 207.1
Quality Assurance Plan	Provides the contractors plan and program for assuring the quality of the system.	SECNAVINST 5000.2

Typical Document Request	Description	Source
Reliability, Availability and Maintainability Plans and reports	Provides plans to influence the design, and provides reports from the results of the completed analyses (e.g., failure modes, effects & criticality analysis).	DODI/ SECNAVINST 5000.2
Results of Design Analyses	Provides analyses as part of the design process to identify, quantify and qualify product characteristics in terms of attributes, tolerances and test and inspection requirements necessary to produce a quality product that meets its life cycle and supportability requirements. Examples of analyses include reliability, availability and maintainability predictions, task time analyses, testability analysis, worst case tolerance analysis, stress analysis, sneak circuit analysis and failure mode, effects and criticality analysis.	SECNAVINST 5000.2, DFARS 207.1
Software Development Plan	Describes responsibilities, tasks, deliverables and schedules. The descriptions include how the design, review and tests will be performed. The plan addresses management and control of the development process, software development practices or standards to be followed, and procedures to be used for tracking and reporting progress.	AKSS
Software Security Plan	Addresses various aspects of security such as information assurance, protection of critical program information, and obtaining security certification and accreditation if not included in other documents.	SECNAVINST 5000.2
Supply Support Management Plan	Identifies the major supply support events/deliveries/milestones for an acquisition or configuration change with projected and actual delivery dates for each event from budgeting through the material support date.	AKSS
Supportability Analysis Summaries (Maintenance Planning & Repair Analysis, Support & Test Equipment, Supply Support, Manpower, Personnel & Training, Facilities, Packaging, Handling, Storage & Transportation, and Post Production Support)	Provides information for planning, assessing program status and decision making by the government relative to the logistics disciplines/elements.	DODI/ SECNAVINST 5000.2
System Operating & Maintenance Documents	Contains information and instructions for the installation, operation, maintenance, training and support of a system.	SECNAVINST 5000.2

Typical Document Request	Description	Source
User Logistics Support Summary (ULSS)	Identifies product support necessary to operate and maintain the equipment in their operational environment. It describes the degree of contractor support and organic support that a site should expect at site activation as well as when full organic support is expected. This document is generated from the data contained in the maintenance plan. The ULSS is used to schedule the delivery of product support by site and level of maintenance.	ULSS

Appendix C
Initial Operational Capability/ Full Operational Capability Assessment Information

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Objective

In accordance with SECNAV Instructions 5000.2 and 4105.1, the Program Executive Officer (PEO), Direct Reporting Program Manager (DRPM) and cognizant Systems Commander (SYSCOM) are required to assess logistics readiness in conjunction with the user prior to Initial Operational Capability (IOC) or Fleet introduction and Full Operational Capability (FOC). The objective of this Appendix is to provide additional guidance for these assessments.

Logistics Readiness Assessment for IOC and FOC

Effective sustainment of weapon systems begins with the design and development of reliable and maintainable systems through the continuous application of a robust systems engineering methodology. The acquisition program should define the actions, when complete, that will constitute attainment of IOC and FOC. The program should be planned, managed, executed and resourced such that full logistics support will be in place at system IOC and FOC.

The Services, in conjunction with users, are required to conduct continuing reviews of sustainment strategies, utilizing comparisons of performance expectation as defined in performance agreements against actual performance measures. Program managers shall revise, correct and improve sustainment strategies as necessary to meet performance requirements.

An IOC assessment is performed as the basis for certifying the adequacy of the in place logistics support for IOC. The assessment is conducted by the developing activity with its user customers. It provides the fleet an opportunity to accept, reject or modify the program manager designed workaround plans to resolve any supportability deficiencies and/or delays to IOC.

- IOC Supportability Reviews- Performance and related acceptance criteria are assessed to confirm:
  - Design maturity of the system.
  - User Logistics Support Summary approval status.
  - All required logistics resources have been delivered to the user.
  - Product Support Integrator/Provider agreements, contracts and funding are in place.
  - Product Support Integrator/Provider plans to meet war fighter requirements.
- FOC Supportability Reviews- Required at FOC and periodically thereafter, or when precipitated by changes in requirements/design or performance problems to assess the adequacy and effectiveness of existing logistics support. These post deployment reviews are held nominally every 3-5 years after IOC or when precipitated by changes in requirements/design to:
  - Review Product Support Integrator/Provider performance.
  - Review incorporated product improvements.
  - Confirm configuration control.
  - Modify Performance Based Logistics (PBL) agreements as needed based on changing warfighter requirements, system design or effectiveness of the logistics support/sustainment strategy.

Pre-IOC and FOC Logistics Assessment Sample Checklist

The following are examples of supportability questions that may be applicable to IOC or FOC assessments:

Acquisition Logistics Support Management

- Has the ULSS been coordinated with the user community?
- Have all required logistics resources been procured and delivered to the user?

Computer Resources Support

- Will the software support activity have all software support established (budget, personnel, tools, facilities, hardware, documentation and support equipment) prior to IOC?

Design Interface (Reliability, Availability And Maintainability)

- Is the process implemented to assess achieved RAM performance by collection and analysis of user data?
- Are system thresholds for reliability, maintainability and availability being achieved in the fleet?
- Does 3-M data indicate uncorrected logistics problems exist?
- What are the plan of action and milestones for corrective actions?

Facilities

- Is facility construction complete?
- If facility construction is not complete, what interim facility support will be available?
- Have all facilities been activated?
- If all facilities have not activated, what are the plans for activation?
- Are all host tenant agreements in place?

Product and Technical Data

- Has the Government accepted the data package?
- Have changes been made that were identified during the physical configuration audit?
- Is the technical data package suitable for provisioning and competitive procurement?
- Does the data package cover all replenishment spare and repair parts?
- What data rights does the Government own?
- Are control drawings for all vendor items contained in the package?
- Does the data package adequately describe all unique manufacturing processes, test requirements, etc.?
- Has the data package been delivered to the drawing repository?

Technical Manuals

- Are approved technical manuals available to support the end item and all peculiar support equipment?
- If not, what is the work around plan to compensate for this deficiency?
- How will funding requirements for post-production support of technical manuals be identified (i.e. updates and revisions)?
- Are technical manuals (hard copy or digital) available in the quantities required? Are they up to date? Do they match the fielded configurations?

Maintenance Planning

- What post-production issues have been identified?
- What is the schedule for supportability assessments?
- What is the schedule for post-deployment reviews?
- Who is responsible for maintaining the maintenance plan?
- Is the planned maintenance system adequate?
- Are maintenance requirements cards and maintenance index pages up to date?

Depot Planning

- Is the interim depot ready to accept workload?
- If this is a commercial depot, is the contract awarded?
- When will the depot manager certify the depot for support of the system?
- When will all organic depot personnel be trained and all required equipment, tools, etc. - be in place to perform depot maintenance?
- Are all depot military construction projects completed or underway?
- Has a CORE analysis been completed?
- Has a depot maintenance interservice study been completed?
- Do the planning efforts call for a requirement for depot capability establishment at IOC plus four?
- Are teaming efforts between the depots and original equipment manufacturers being considered?
- Are cost estimates for establishing depot capability being addressed?

- Are cost estimates for establishing depot capability included in the Logistics Requirements Funding Summary?

Configuration Management
- Does the platform configuration and logistics support index database/weapons system file reflect accurate configurations? Does the Ships Non-Tactical Automated Data Processing (SNAP) program database reflect accurate system configuration?
- How are software configurations tracked? Is the repository accurate?

Training
- Are training courses adequate? Do they train on the fielded configuration(s)?
- Are training courses conducted in a sufficient timeframe to support IOC/fielding.

Supportability Analysis
- What post-production support planning has been accomplished?
- Is there a plan for a sustained maintenance planning Integrated Process Team (IPT) to review the established maintenance support structure?
- Is the sustained maintenance planning IPT function, including data collection and analysis funded?
- What support issues have been identified?
- What potential solutions have been identified?
- What logistics reviews will be held during the deployment phase?
- When will a supportability assessment report be prepared that identifies deviations between predicted and actual supportability values, causes of the deviations and a description of actions required to correct deficiencies?
- Has the supportability analysis database been received by the maintaining activity?
- How will the results of post-deployment reviews and sustained maintenance planning be reflected in the supportability analysis database?

Warranty
- Does the maintenance plan identify warranty requirements?
- What problems with warranty administration at the O and I-levels have been identified during early fielding of the system?
- What modifications to the warranty program are required?
- What incentives have been offered to the contractor to increase the warranty period?

Support Equipment (SE)
- Are all required Test Program Sets (TPSs) complete?
- Have the TPSs and associated documentation been evaluated and verified?
- Will TPSs used at O- and I-level be available at IOC/FOC?
- Who will duplicate the verified TPSs, and when will they be shipped to user sites?
- What Navy activity (e.g., software support activity) will maintain the diagnostic software, issue field changes, etc.?
- When will the transition to organic be complete?
- When will TPS be delivered to the operational sites?
- What is the schedule for installation of Special Purpose Electronic Test Equipment (SPETE) at user sites?
- When were installation control drawings for SPETE delivered?
- What are the calibration requirements for SPETE and are they documented?
- What are the configuration status accounting responsibilities for all SPETE?
- When was availability of support equipment and tools at O- and I-level sites and training schools verified?
- When will sufficient quantities of maintenance assist modules be produced to support the O- and I-level installation schedule?
- What maintenance assist modules are authorized in allowance documents?

- What required common and peculiar SE, calibration requirements and procedures, required maintenance assist modules and tools are identified in the User Logistics Support Summary (ULSS)?
- Have all necessary changes to shipboard spaces been made to accommodate the installation and/or storage of the SE?
- When will SE be in place at the operational site?
- When will support for SE be in place?
- When will SE training classes be ready for training?
- What is the depot support concept for the SE?
- Is SE in the Coordinated Shipboard Allowance List (COSAL)/SNAP or Aviation Coordinated Allowance List (AVCAL)/ Naval Aviation Logistics Command Management Information System (NALCOMIS)?

Supply Support
- Is interim contractor supply support fully funded?
- Is there an adequate, formalized plan for transitioning from contractor supply support to full Navy supply support?
- Have adequate funds been budgeted to support both interim and Navy support requirements?
- Does the ULSS provide the following:
- An approved parts list for each equipment type?
- Turn-in procedures for repairable items?
  - Requisitioning procedures?
  - Are points of contact for the supply officer to seek assistance from when supply problems occur?
  - Is the Coordinated Shipboard Allowance List (COSAL) and/or SNAP files and/or the AVCAL and/or NALCOMIS accurate? Are allowance parts on-board?
  - Is wholesale supply support adequate? Are there backorders for critical parts?
- Do allowance parts lists or allowance requirements registers reflect the current component level configuration?
- Has total asset visibility been implemented across the program, including contractor assets?

Hazardous Material
- Does the ULSS identify hazardous materials required to support the system?
- Are these hazardous materials new to the user community?
- Does training emphasize the proper handling and storage of these materials?
- What efforts will be made to reduce or eliminate the use of hazardous material for the support of the system?
- Who will maintain hazardous material management plans until closeout of the system?
- Are hazardous materials properly tracked, stored, handled and disposed of?
- Are material safety data sheets available for all hazardous items?

Human Factors Engineering (HFE)
- Have HFE deficiencies that were identified during previous ILA assessments or testing been corrected?
- Have HFE requirements been identified as candidates for engineering change proposals?
- Have contractual provisions been made to allow for adequate HFE simulations using mockups, models or computer simulations for engineering change proposals?

Systems Safety (Hardware and Software)
- What safety issues remain open?
- What safety concerns were raised during initial training and fielding of the system?

Appendix D
Glossary of Terms

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AKS: Acquisition Knowledge Sharing System

Authoritative Data Source: Data products including databases that have been identified, described and designated by the appropriate Department of Navy Functional Data Managers, U.S. Military Services and DOD Components as the authorized producer of data for a given requirement.

Built-In-Test (BIT): Provides "Built-In" monitoring, fault detection and isolation capabilities as integral feature of the system design. It can be supplemented with imbedded expert system technology that incorporates diagnostic logic/strategies into the prime system.

Business Case Analysis (BCA): The evaluation of alternative solutions for obtaining best value while achieving operational requirements balancing cost, schedule, performance and risk.

Capabilities Development Document (CDD): A document that provides the operational performance attributes, including KPPs, necessary for the acquisition community to design a proposed system and establish a program baseline, normally using an evolutionary acquisition strategy. The CDD outlines an affordable increment of militarily useful, logistically supportable and technically mature capability that can be effectively developed, produced or acquired, deployed and sustained. The CDD supports the Milestone B acquisition decision.

Capabilities Production Document (CPD): A document that addresses the information necessary to support production, testing and deployment of an affordable and supportable increment of an acquisition program. The CPD must be validated and approved before the Milestone C decision review.

Condition Based Maintenance (CBM): A form of maintenance based on real time assessment of the system's condition, obtained from embedded sensors and/or external tests and measurements, to forecast incipient failures for corrective actions.

Condition Based Maintenance Plus (CBM+): CBM+ expands on the CBM concept by encompassing other technologies, processes and procedures such as information system technologies that enable improved maintenance and logistics practices.

Configuration Item (CI): Any hardware, software, or combination of both that satisfies an end use function and is designated for separate configuration management. These may be functional, allocated or product configurations.

Contractor Logistics Support (CLS): CLS is the performance of maintenance and/or material management functions for a DOD system by a commercial activity. CLS is a product support strategy that can be selected for implementing Performance Based Logistics.

Design Reference Mission Profile (DRMP): The DRMP provides the mission profile to which the system is designed. It includes the environmental profile, functional profiles and logistics use profiles.

Diminishing Manufacturing Sources and Material Shortages (DMSMS): A DoD centralized database identifying long term capabilities in the areas of manufacturing technology and material availability to support design, manufacturing and logistics operations.

Full Operational Capability (FOC): Capability of a system to achieve full operational readiness, effectiveness and supportability requirements when performing its as-designed mission.

Functional Configuration Audit (FCA): The formal examination of functional characteristics of a configuration item, or system to verify that the item has achieved the requirements specified in its functional and/or allocated configuration documentation.

Gap Analysis: An assessment of the difference between a systems design, test, production and logistics mission requirements and the available COTS/NDI equipment capabilities.

Information Exchange Requirements (IER): The requirement for information to be passed between and among forces, organizations, or administrative structures concerning ongoing activities. IER requirements identify who exchanges what information with whom, as well as, why the information is necessary and how that information will be used.

Information Interoperability: The exchange and use of information in any form, electronically, that enables effective operations for both warfighting and combat support areas both within the DOD and external activities, and synchronizes both material and non-material aspects. Information interoperability enables systems, units or forces to provide services to, and accept services from, other systems, units or forces, and to use the services so exchanged to operate effectively together.

Initial Capabilities Document (ICD): Documents the need for a materiel approach to a specific capability gap derived from an initial analysis of materiel approaches executed by the operational user and, as required, an independent analysis of materiel alternatives. It defines the capability gap in terms of the functional area, the relevant range of military operations, desired effects and time. The ICD supports the Milestone A acquisition decision, and subsequent Technology Development phase activities

Initial Operational Capability (IOC): The first attainment of the capability to employ effectively a weapon, item of equipment, or system of approved specific characteristics that is manned or operated by an adequately trained, equipped, and supported military unit or force.

Interactive Electronic Technical Manual (IETM): A computer-based collection of information needed for the diagnosis and maintenance of a defense system. It is optically arranged and formatted for interactive presentation to the end user on an electronic display system. Unlike other optical systems that display a page of text from a single document, IETMs present interrelated information from multiple sources tailored to user queries.

Key Performance Parameters (KPP): Those minimum attributes or characteristics considered most essential for an effective military capability. They characterize the major drivers of operational suitability, interoperability, supportability, schedule, technical progress and cost.

Logistics Requirements Funding Summary (LRFS): The LRFS is a breakdown of product support functions and sub-functions to establish a minimum level of product support. It identifies support resource requirements and the funds available to meet those requirements. The summary displays requirements versus funding for all ILS elements and related disciplines, by fiscal year and appropriation, and is traceable to logistic support plans.

Performance Based Logistics (PBL): PBL is an agreement, usually long term, in which the provider (organic, commercial, and/or public/private partnership) is incentivized and empowered to meet overarching customer oriented performance requirements (reliability, availability, etc.) in order to improve product support effectiveness while reducing Total Ownership Cost.

Performance Based Logistics Agreements: PBL support is usually documented in a contractual arrangement (commercial, organic or a combination of both) where the provider is held to customer oriented performance requirements, such as reliability improvement, availability improvement, and reduced delivery times with the end goal of improving logistics support to the warfighter.

Physical Configuration Audit (PCA): The formal examination of the "as-built" configuration of a configuration item against its technical documentation to establish or verify the configuration item's product baseline. Conducted to verify that the as-built configuration item matches the design requirements of the conditionally approved engineering drawings, software design documents and product specifications.

Product/Technical Data Package: A technical description of an item adequate for supporting an acquisition strategy, production, engineering, and logistics support. The description defines the required design configuration and procedures to ensure adequacy of item performance. It consists of all applicable

technical data such as drawings, specifications, standards, manuals, performance requirements, quality assurance provisions, packaging details, etc. Documentation of computer programs and related software are technical data, while computer programs and related software are not.

Reliability Centered Maintenance (RCM): A disciplined logic or methodology used to identify preventive and corrective maintenance tasks to realize the inherent reliability of equipment at a minimum expenditure of resources. Preventative maintenance requirements are developed to increase system availability/reliability by identifying and correcting failures or potential failures before the system is degraded. The preventative maintenance may be based on time, material condition, failure rates or any combination.

Total Life Cycle Systems Management (TLCSM): TLCSM is the implementation, management, and oversight, by the designated Program Manager, of all activities associated with the acquisition, development, production, fielding, sustainment and disposal of a DOD weapon system across its life cycle. It empowers the program Manager as the life cycle manager with full accountability and responsibility for systems acquisition and follow-on sustainment.

Total Ownership Cost (TOC): Includes all costs associated with the research, development, procurement, operation, logistics support and disposal of an individual weapon system, including the total supporting infrastructure that plans, manages and executes that weapon system program over its full life.

User Logistics Support Summary (ULSS): The ULSS is prepared by the Program Manager for users to identify logistics resources necessary to operate and maintain the system, subsystems and equipment in their operational environment. The ULSS summarizes, in brief, the results of logistics planning and acquisition in the ILSP/ALSP. A separate ULSS may be required for each operating site.